ABSTRACTS OF WORLD MEDICINE

VOL. 12 NO. 1 JULY, 1952

Pathology

1. Studies in the Pathology and Pathogenesis of Experimental Brucellosis—III. Investigations Pertaining to the Function of the Spleen

A. I. BRAUDE and W. W. SPINK. *Journal of Infectious Diseases* [*J. infect. Dis.*] **89**, 272–276, Nov.–Dec., 1951. 1 fig., 7 refs.

Comparison of the survival rates of splenectomized and non-splenectomized mice infected with *Brucella abortus* indicated that the spleen is not essential for protection against this organism. The factor which accounts for splenomegaly in experimental brucellosis is the invasion of the spleen by *Brucella*. In the splenectomized infected mice an exaggeration of the granulomatous reaction characteristically elicited by *Brucella* in the liver was found. *Joyce Wright*

2. The Physiology and Cytology of Pulmonary Edema and Pleural Effusion Produced in Rats by Alpha-naphthyl Thiourea (Antu)

C. P. RICHTER. *Journal of Thoracic Surgery* [*J. thorac. Surg.*] **23**, 66–91, Jan., 1952. 14 figs., 22 refs.

CHEMICAL PATHOLOGY

3. Estimation of Ascitic Fluid Volumes

L. BAKER, R. C. PUESTOW, S. KRUGER, and J. H. LAST. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 30–35, Jan., 1952. 2 figs., 8 refs.

The ascitic-fluid volume in 9 cases of hepatic cirrhosis at the Veterans Administration Hospital, Hines, Illinois, was measured by the indirect dilution method, bromsulphalein (BSP), iodo-albumin labelled with radioactive iodine (IA), and *p*-aminohippurate (PAH) being used as solutes, and the completeness of ascitic-fluid removal by paracentesis studied. In a group of 5 patients the distribution volume of BSP (mean 7·71 litres) was slightly less than that of IA (mean 8·39 litres), which again was slightly less than that of PAH (mean 8·97 litres). In a second group of 5 patients the ascitic-fluid volume as measured by the BSP and IA methods (respective means 8·48 and 8·60 litres) exceeded that obtained by paracentesis (mean 8·05 litres).

It is recommended that for routine clinical purposes the ascitic-fluid volume should be measured by injecting 5 ml. of bromsulphalein solution intraperitoneally and withdrawing a single ascitic-fluid sample after 2 to 3 hours. The figure obtained by this procedure should fall within 10% of that obtained by the more accurate serial sampling technique. *J. E. Page*

4. Simultaneous Determination of Total Body Water by Antipyrine and Deuterium Oxide; Evaluation of the Methods on Edematous Subjects

W. W. HURST, F. R. SCHEMM, and W. C. VOGEL. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 36–40, Jan., 1952. 6 refs.

The antipyrine and deuterium oxide methods for determining total body water content in oedematous patients at the Montana Deaconess Hospital, Great Falls, have been evaluated by comparing simultaneous observations, correlating derived volume losses with the weight losses after clearance of the oedema, and comparing diffusion rates by measuring the antipyrine and deuterium oxide concentrations in blood, interstitial fluid, and serous-cavity fluid. Deuterium oxide (55 g.) and antipyrine (1·5 g.) were injected intravenously into 16 patients with arteriosclerotic heart disease, 7 with rheumatic heart disease, 4 with chronic nephritis, and 1 with cor pulmonale, and blood samples examined for deuterium oxide and antipyrine after 3- to 20-hour intervals.

The total body water determined with deuterium oxide was always greater (mean 64·2% of body weight) than when determined with antipyrine (mean 54·6% of body weight). When the oedema was removed the body water loss indicated by deuterium oxide (mean 9·5 litres) was greater than that indicated by antipyrine (mean 8·6 litres), and agreed better with the observed weight loss (mean 12·25 kg.). Antipyrine diffused throughout the body more slowly than deuterium oxide. In the presence of massive oedema with serous-cavity effusions the deuterium oxide method is the more accurate, but enough time must be allowed for equilibration to occur. *J. E. Page*

5. Urine–Blood Ratios of Deuterium Oxide in Man

W. W. HURST, F. R. SCHEMM, and W. C. VOGEL. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 41–43, Jan., 1952. 2 refs.

Deuterium oxide (55 g.) was given intravenously or orally to fasting subjects, both oedematous and non-oedematous, and also to healthy individuals in the Metabolic Unit of the Montana Deaconess Hospital, Great Falls. The ratio of deuterium oxide to water in samples of blood and urine, collected at hourly intervals up to 24 hours, was measured. The average urine–blood ratio of deuterium oxide as determined 76 times on 10 subjects was 1·00, indicating that the kidney does not differentiate between water and deuterium oxide. The determination of total body water may therefore be

based on a measurement of the deuterium oxide content of urine instead of blood. In suitable subjects the deuterium oxide may be administered orally.

J. E. Page

6. **Simplified Method of Estimating Formaldehydogenic Corticosteroids in Urine**

J. RABINOVITCH, J. DECOMBE, and A. FREEDMAN. *Lancet* [*Lancet*] **2**, 1201–1202, Dec. 29, 1951. 2 refs.

7. **The Serum Mucoproteins as an Aid in the Differentiation of Neoplastic from Primary Parenchymatous Liver Disease**

E. M. GREENSPAN, B. TEPPER, L. L. TERRY, and E. B. SCHOENBACH. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 44–56, Jan., 1952. 5 figs., 25 refs.

The serum mucoprotein level and its polysaccharide content were measured in 88 healthy subjects and in 25 patients with neoplastic involvement of the liver, 34 with acute hepatitis, 31 with portal cirrhosis, and 31 with obstructive or inflammatory biliary disease. The serum bilirubin, albumin, and globulin levels, albumin–globulin ratio, thymol turbidity and zinc sulphate turbidity reactions, serum alkaline-phosphatase level, bromsulphalein retention, and plasma prothrombin time were also determined for each subject.

For healthy subjects the average mucoprotein and polysaccharide levels were 57·6 mg. (biuret peptide) and 9·4 mg. (galactose–mannose) per 100 ml. of serum respectively, the mean polysaccharide–mucoprotein ratio being 0·17. The mean and lower limits of normal mucoprotein level in women were slightly lower than in men. In acute hepatitis the average serum mucoprotein level was 38·6 mg. per 100 ml.; in portal cirrhosis 32·5 mg. per 100 ml.; in hepatomegaly with hepatic metastases 116·1 mg. per 100 ml.; and in obstructive or inflammatory biliary disease 82·9 mg. per 100 ml. The polysaccharide–mucoprotein ratio was increased in patients with hepatitis (mean 0·24) and cirrhosis (mean 0·25), but unchanged in those with hepatic metastases (mean 0·19) and biliary disease (mean 0·19).

It is concluded that an impairment in α-globulin formation is probably related to the reduced serum mucoprotein level of patients with diffuse liver disease. The value of serum mucoprotein estimations in the differential diagnosis of hepatomegaly and jaundice is discussed.

J. E. Page

8. **The Use of Formalin and Alcohol in the Estimation of Prostatic Phosphatase**

G. E. DELORY, T. H. SWEETSER, and T. A. WHITE. *Journal of Urology* [*J. Urol.*] **66**, 724–733, Nov., 1951. 2 figs., 7 refs.

Working partly in Canada at Winnipeg General Hospital, and partly in England at Preston Royal Infirmary, the authors have compared the levels of formalin-resistant and alcohol-active serum acid phosphatase and total acid phosphatase in cases of benign and malignant disease of the prostate and in various other, non-prostatic, diseases. In 77 healthy men the total acid-phosphatase level ranged from 1·8 to 5·3 units per 100 ml. (mean 3·6) and formalin-resistant acid-phosphatase level from 0·7 to 5·1 units (mean 2·3). The alcohol-active enzyme level was estimated in 69 of these; 13 showed a decrease of more than 1 unit after alcohol treatment, the greatest fall being 1·8 units.

In cases of prostatic cancer with bony metastases which had not been treated with hormones, 10 out of 12 men had total acid-phosphatase levels of more than 5 units per 100 ml., 9 out of 11 had formalin-resistant acid-phosphatase levels of more than 5 units, and 4 out of 6 showed a fall of more than 1 unit per 100 ml. after treatment with alcohol. Of 18 cases of prostatic cancer without demonstrable metastases in which total acid phosphatase was estimated, 7 had levels of more than 5 units per 100 ml.; in 4 out of 17 of these cases in which formalin-resistant acid phosphatase was determined the level was more than 5 units, and in 3 between 3 and 5 units per 100 ml.; 3 out of 11 of these showed a fall of more than 1 unit after alcohol treatment. The total acid phosphatase was estimated in 95 cases of benign prostatic hypertrophy; in 12 of them the level was more than 5 units, and in one of these more than 9 units per 100 ml., the level falling to normal after prostatectomy at which a recent infarct of the prostate was found; 7 out of these 95 cases had levels of more than 5 units of formalin-resistant enzyme, and 32 of more than 3 units per 100 ml. Of 42 benign cases 10 showed a fall of more than 1 unit after alcohol treatment. The results of estimations on cases of non-prostatic disease are also discussed. It is concluded that while the formalin method is not uniformly successful, its simplicity makes it the method of choice as a routine laboratory test.

Walter H. H. Merivale

MORBID CYTOLOGY

9. **The Transformation of Liver Cells into Histiocytes *in vitro*, and its Causes.** (La transformation histiocytaire des cellules hépatiques cultivées *in vitro* et son déterminisme)

J. FREDERIC. *Revue d'Hématologie* [*Rev. Hémat.*] **6**, 423–447, 1951. 15 figs., bibliography.

Whereas it is generally accepted that mesenchyme cells, even the specialized ones from muscle and fibrous tissue, can be converted into histiocytes, no such agreement exists about the possible transformation of epithelial cells. The author refers to earlier work which demonstrated phagocytosis *in vivo* by the epithelium of the mammary gland and the alveolar lining of the lungs, findings which suggested that these cells could undertake the functions of histiocytes.

The author's own work was carried out on tissue cultures, using explants from livers of chicken embryos about 8 days old. At this stage of development connective tissue is almost entirely absent from the liver. Individual epithelial cells were watched and some of them filmed; it was observed that genuine histiocytes were formed from epithelial cells within 5 to 12 hours. There were changes both in the morphological appearance and

in function. At first the cell borders became more precise and lit up when viewed under the phase-contrast microscope, then the cytoplasm began to show small vacuoles and fat droplets, and finally cells became detached from their neighbours and undulant membranes made their appearance. These membranes, of which detailed photomicrographs are presented, are considered an important specific feature. The morphological changes were accompanied by acquisition of the ability to store neutral red. Macrophage counts were made on tissue cultures by enumerating those cells which were stained with neutral red *in vivo*. A significant increase in the number was seen when they were incubated for 3 hours in alkaline salt solutions (*p*H 8·8) or even when kept at neutral *p*H if the explant had been washed previously in such alkaline solutions. There was no rise in mitotic figures; thus the additional histiocytes could not have been formed by active division of the Kupffer cells or leucocytes present. Similar effects were seen when choline chloride was added, the optimum dose being M/100. Tetraethyl ammonium was also active, the optimum concentration being M/1,000, but ordinary ammonium chloride proved toxic.

The author discusses at length the criteria used for labelling cells as histiocytes. He considers as most important the faculty of storing neutral red *in vivo* and the appearance of undulant membranes. It is admitted that the finding of each of the two characteristics by itself is not quite sufficient to allow one to call a cell a macrophage, but it is believed that their combination is highly significant. [Whether the reader accepts the claims made in this thorough and very careful study will depend on the extent to which he will accept the definition of a macrophage proposed by the author.] *H. Lehmann*

10. **The Cytologic Interpretation of the Prostatic Smear**
H. PETERS and I. N. FRANK. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 69–76, Jan., 1952. 15 figs., 14 refs.

The authors, from the University of Rochester, New York, state that in cases of carcinoma of the prostate malignant cells may be recognized in the smears taken from the external urinary meatus after prostatic massage, and to test their claim they examined smears from 616 patients, of whom 100 had carcinoma of the prostate. There were 2 false positive results, the smears being reported to contain malignant cells when the patients concerned were not in fact suffering from carcinoma of the prostate. Of the malignant cases, 88 out of the 100 were detected with certainty, and in 5 of these the smear gave the first indication of the malignant condition; 7 smears were reported as doubtful, although the patients concerned had proven carcinoma. There were 5 false negative results—that is, carcinoma cells were not found in the smears from proven cases of carcinoma; 2 of these patients had been given oestrogen therapy for long periods.

The technique is described in detail, and a full description is given of all the cells, both normal and pathological, found in the smears. The differences in cytology after oestrogen therapy are also discussed. The paper is illustrated by fine photomicrographs and drawings, and there is an extensive bibliography.

The authors [quite reasonably, in the abstracter's opinion] state that in a condition like carcinoma of the prostate, which is often unsuspected until the late stage of the disease, any method which offers hope of earlier diagnosis should be given a chance.

W. Skyrme Rees

11. **The Prostatic Smear in Cancer of the Prostate.** (Les frottis prostatiques dans le cancer de la prostate)
P. J. VIALA, T. GROSZ, J. CHOMÉ, and R. DU BOISTESSELIN. *Presse Médicale* [*Pr. méd.*] **59**, 1757–1759, Dec. 25, 1951. 13 figs., 12 refs.

MORBID ANATOMY AND HISTOLOGY

12. **Focal Lesions in Skeletal Muscles and Peripheral Nerves in Rheumatoid Arthritis and Other Conditions**
B. CRUICKSHANK. *Journal of Pathology and Bacteriology* [*J. Path. Bact.*] **64**, 21–32, Jan., 1952. 26 figs., 19 refs.

To test the assertion that focal collections of round cells in skeletal muscle and peripheral nerve are characteristic of rheumatoid arthritis, the author, at the University of Edinburgh, studied muscle from 93 cases of rheumatoid arthritis, 73 of other rheumatic disease, and 419 of non-rheumatic disease, and also nerves from similar groups of 20, 21, and 120 cases respectively. Focal lesions were found in muscle in 45% of cases of rheumatoid arthritis, 44% of other rheumatic cases, and 14% of controls; the corresponding figures for nerves were 75%, 57%, and 17%. The main lesion was a collection of lymphocytes, but slight variants from this were seen. There was no lesion characteristic of rheumatoid arthritis, though diagnostic lesions were observed in some cases of rheumatic fever, lupus erythematosus, and polyarteritis.

The author concludes that focal collections of round cells in muscle and nerve are non-specific.

C. V. Harrison

13. **Histopathology of Diarthrodial Joints in Ankylosing Spondylitis**
B. CRUICKSHANK. *Annals of the Rheumatic Diseases* [*Ann. rheum. Dis.*] **10**, 393–404, Dec. 1951. 18 figs., 6 refs.

This paper from the University of Edinburgh is based on the examination of 3 post-mortem cases of ankylosing spondylitis and of biopsy specimens of the hip and other joints in 9 others. There is a general description of the changes seen, illustrated with 18 figures and compared very briefly with the findings in a great variety of non-spondylitic pathological conditions, including rheumatoid arthritis, rheumatic fever, osteoarthritis, gout, systemic lupus erythematosus, polyarteritis nodosa, bacterial and traumatic arthritis, bursitis, and tenosynovitis. [No distinction is made (and hence, presumably, no difference is seen) between the intervertebral (apophysial) joints and the more peripheral ones.] While some of the changes (vascular obliteration

particularly) are held to be due to irradiation, it is considered possible to trace the sequence of events, which starts in the synovial tissue and produces an increased number of villi with a thickened synovial cell lining. This granulation tissue spreads over the surface of the cartilage, destroying it, penetrating the underlying bone, and producing first fibrous and then bony ankylosis—features closely similar to those seen in rheumatoid arthritis. " It has been possible to match all the stages of ankylosing spondylitis with sections from cases of rheumatoid arthritis." There were several minor differences, however: a greater tendency to haemorrhage, thickening of the small vessels, a marked tendency to bony ankylosis, an absence of nodules, and very few of the muscle and nerve lesions seen in rheumatoid arthritis.

The author notes, however, that there are several other conditions where this type of lesion is found, such as systemic lupus erythematosus, non-rheumatic arthritis, bursitis, and non-specific tenosynovitis. It is concluded that these pathological changes represent a common response in spondylitis and rheumatoid arthritis to different, but perhaps related, aetiological factors, and it is not thought to be justifiable in the present state of knowledge to classify ankylosing spondylitis as a variant of rheumatoid arthritis.

[Studies of this nature would be greatly improved by more detailed correlation with clinical features; even the age and sex of the patients are omitted.]

E. G. L. Bywaters

14. The Role of Elastic Tissue in the Formation of the Arteriosclerotic Lesion

A. I. LANSING. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 39–49, Jan., 1952. 10 figs.

In this paper the hypothesis that arteriosclerosis is " a dual process involving ageing of the arterial wall and cholesterol accumulation in the intima " is propounded as a result of investigations carried out at the Washington University School of Medicine, St. Louis, Missouri.

Chemical and microscopical techniques were used. Elastin was estimated as the insoluble fraction remaining after the aortic media had been heated at 98° C. in decinormal sodium hydroxide solution for 45 minutes, and calcium and cholesterol by chemical analysis. Histological investigation and dark-field examination of micro-incinerated sections are said to give results comparable to those of the chemical methods. No further details are given, but the chemical results, although not statistically analysed, are presented in detail. About 100 subjects were studied.

It is estimated that in man the elastin content of the aorta and pulmonary artery remains, within wide limits, roughly constant throughout life at a mean value of about 42%. The calcium content of elastin in systemic vessels, on the other hand, rises from less than 1% in childhood by about 1% per decade. In the pulmonary artery, provided atheroma is absent, no such rise is found.

When actual plaques were analysed it was found that while the calcium content was constant at all stages of development, that of cholesterol rose sharply in the older plaques.

The author concludes that " calcification of senescent elastic tissue in the media occurs with or without atheromatosis ", and that " cholesterol accumulates in the intimal plaques when the underlying media has undergone elastic tissue calcification ". *J. B. Enticknap*

15. The Size of Follicles in Non-toxic Goitre

S. TAYLOR. *Lancet* [*Lancet*] **1**, 175–178, Jan. 26, 1952. 6 figs., 9 refs.

At the Hammersmith Hospital, London, patients with non-toxic goitre were given 100 μc. of radioactive iodine, and 30 to 50 hours later its uptake was measured by scanning the thyroid region and also estimating the urinary excretion. In all cases uptake was normal. Thyroidectomy was performed 24 hours later and autoradiographs of the thyroid were prepared. In normal thyroid glands the uptake of ^{131}I is generalized; in the present series it was localized in foci consisting of uniformly small acini. Measurements showed that the active acini had a diameter between 50 and 89 μ, while inactive ones were between 162 and 205 μ (mean figures in individual glands). The significance of this finding is discussed. *C. V. Harrison*

16. Dissecting Aortic Aneurysm. [In English]

V. RITAMA and A. AHO. *Annales Medicinae Internae Fenniae* [*Ann. Med. intern. fenn.*] **40**, Suppl. 10, 1–35, 1951. 36 figs., bibliography.

This paper contains a good review of the literature followed by an analysis of 8 cases of dissecting aneurysm admitted to the Kivelä Hospital, Helsinki, and coming to necropsy. Clinical and pathological findings are given in detail. Sudden onset of pain in the chest with cough was the commonest presenting symptom, and a cystic medial necrosis, as originally described by Erdheim, a constant microscopical finding. The authors state that " few important points were brought to light by this study with regard to the aetiological factors of the condition ". They hold the view that the primary changes are in the intercellular ground substance, but that the cause of these changes remains undetermined.

G. Jacob

17. Myocardial Lesions in Subacute Bacterial Endocarditis

E. L. PERRY, R. G. FLEMING, and J. E. EDWARDS. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 126–137, Jan., 1952. 4 figs.

The myocardium was studied in 43 untreated cases of subacute bacterial endocarditis and in 9 cases treated with penicillin at the Mayo Clinic. Miliary infarcts in varying stages of development were found in 90% of all cases, and non-specific interstitial inflammatory lesions and perivascular lesions were found in 50% of the cases. These were regarded as embolic in origin. In the treated group, as compared with the untreated, there was a greater tendency for the lesions to heal and the production of more chronic reactions; otherwise the lesions

in the two groups were indistinguishable. Foreign-body granulomata (embolic) containing calcium were found in one treated case. There appeared to be poor correlation between the myocardial lesions and the incidence of cardiac failure. *R. H. Heptinstall*

18. **Gastric Carcinoma: a Multicentric Lesion**
W. T. COLLINS and E. A. GALL. *Cancer* [*Cancer*] **5**, 62–72, Jan., 1952. 15 figs., 19 refs.

The authors describe a morbid-anatomical and histological investigation of 97 surgical and 20 necropsy specimens of gastric carcinoma. One large block (8 × 5 cm.), including the entire breadth of the neoplasm and as much as possible of the surrounding mucosa, was taken for examination. From 10 stomachs, several blocks cut radially were taken. Multiple independent growths were found in 26 stomachs, in 4 of which they were visible to the naked eye; in the remainder they were visible only on microscopical examination, and these were considered to be pre-invasive. In 37 other stomachs histological features suggestive of an independent focal origin were present. On the basis of these observations the authors assume that carcinoma of the stomach often arises from several sites.

[To produce convincing proof of the multicentric origin of gastric carcinoma requires a more thorough search than that described in this paper.]
A. Wynn Williams

19. **Perivesicular Lipoid Granuloma of the Gall-bladder. An Anatomical Basis for Certain Complications of Cholecystitis.** (Le granulome lipidique périvésiculaire: substratum anatomique de certains accidents des cholécystites)
G. SEILLÉ and J. DE BRUX. *Presse Médicale* [*Pr. méd.*] **59**, 1726–1728, Dec. 25, 1951. 9 figs., 19 refs.

The authors report their clinical and pathological observations in 12 cases of lipoid granulomatosis of the gall-bladder. In all the cases sudanophilic fat was found free or within phagocytes. Acute, subacute, and chronic phases of inflammation are described, necrosis being present in the acute phases and sclerosis being prominent in the chronic phases. The inflammatory tissue was most abundant in the outer part of the gall-bladder wall. It is suggested that the lesions arise from the escape of bile following the rupture of distended Rokitansky–Aschoff sinuses. *A. Wynn Williams*

20. **The Morbid Anatomy and Histochemistry of the Intercapillary Glomerulohyalinosis of Diabetes (Kimmelstiel–Wilson Syndrome).** (Étude anatomo-pathologique et histochimique de la glomérulo-hyalinose intercapillaire des diabétiques (syndrome de Kimmelstiel et Wilson))
E. AZERAD, J. DE BRUX, —. NATAF, and —. ALAGILLE. *Presse Médicale* [*Pr. méd.*] **59**, 1733–1735, Dec. 25, 1951. 10 figs., 34 refs.

In the histochemical examination by the authors of kidneys removed at necropsy from 8 diabetic patients the hyaline glomerular substance described by Kimmelstiel and Wilson was compared with the hyaline material found in the glomeruli in diffuse glomerulonephritis and in amyloidosis respectively. It is suggested that these three types of hyaline substance may be related. The type seen in diabetes probably results from a depolymerization of ground substance. The methods and stains used by the authors are described, and the paper is illustrated by coloured photomicrographs.
A. Wynn Williams

21. **The Significance of Atheroma of the Renal Arteries in Kimmelstiel–Wilson's Syndrome**
G. F. M. HALL. *Journal of Pathology and Bacteriology* [*J. Path. Bact.*] **64**, 103–120, 1952. 20 figs., 21 refs.

The pathological changes in 135 patients dying of diabetes were studied at necropsy. In 51 subjects the kidneys showed Kimmelstiel–Wilson changes characterized by nodular and exudative lesions in the glomeruli. These lesions are described in detail. Of the 51 patients 8 had died of uraemia, and these 8, but no others, showed severe atheroma of the renal arteries or their larger branches, with gross narrowing of the lumen, obvious macroscopically. In these 8 cases there was also ischaemic fibrosis of large numbers of glomeruli, though usually without macroscopic scarring of the kidney. The author believes that this severe atheroma of the renal artery is seen only in diabetes and that it was responsible for the fatal uraemia in his 8 cases. *C. V. Harrison*

22. **Changes in the Mesangium of the Glomerulus in Acute Glomerulonephritis and Hypertensive Disease.** (Le mesangium du floculus glomérulaire. Ses réactions dans la glomérulonéphrite aiguë et les néphrites hypertensives)
N. GOORMAGHTIGH. *Journal d'Urologie Médicale et Chirurgicale* [*J. Urol. méd. chir.*] **57**, 569–585, 1951. 14 figs., 13 refs.

Kidneys from 5 cases of acute glomerulonephritis and a number [unspecified] of cases of other types of hypertensive nephropathy, including cases of eclampsia, were compared with a number [also unspecified] of ischaemic rabbit kidneys. The conclusion is drawn that in anuric hypertensive nephropathies the cells of the juxtaglomerular apparatus or of the related cells of the mesangium are hypertrophied. By "mesangium" is understood the glomerular component demonstrated by Zimmermann in 1933. The glomerular tuft is regarded as an arteriolar segment adapted for filtration. The cells of the juxtaglomerular apparatus and of the mesangium may have an endocrine function and may be of importance in the production of hypertension.

[This contribution draws attention to a subject worthy of closer study. Unfortunately it loses in value from a lack of incisiveness and a paucity of photomicrographs.]
A. Wynn Williams

23. **Polyarteritis Nodosa Associated with Malignant Hypertension, Disseminated Platelet Thrombosis, "Wire Loop" Glomeruli, Pulmonary Silicotuberculosis, and Sarcoidosis-like Lymphadenopathy**
W. S. C. SYMMERS and R. GILLETT. *Archives of Pathology* [*Arch. Path., Chicago*] **52**, 489–504, Dec., 1951. 8 figs., 22 refs.

Bacteriology

24. **Contribution to the Study of the Serology of Leprosy**
N. O. CASTRO and A. A. BONATTI. *International Journal of Leprosy* [*Int. J. Leprosy*] **19**, 309–321, July–Sept., 1951. 2 figs., 4 refs.

The authors describe their investigations into the serology of leprosy. Two microflocculation tests were devised: a qualitative or diagnostic test, and a quantitative or dosimetric test. The antigen used was a lipid extract of lepromatous nodules. The application of the first test in clinical leprosy showed a sensitivity of 73·5% for lepromatous and of 4·8% for tuberculoid cases; in 99·4% of patients without leprosy it was negative. It is considered that this is a diagnostic test for leprosy. Graphic representation of the results obtained with the quantitative test have established serological curves corresponding to the different clinical types: definite patterns were obtained with the frankly tuberculoid cases, whereas the indeterminate cases gave varied patterns.

It is believed that further investigation will result in the application of serology in the classification of cases of leprosy. It is further suggested that the test may have prognostic value with regard to the further evolution of the disease, particularly in the indeterminate forms. A suggested interpretation of the serological phenomena is given, and it is suggested that the tests may have value in determining the suitability of lepromatous cases for the granting of parole.

[The original should be consulted for technical details.]

J. L. Markson

25. **Inactivation of Vaccine Virus by Preparations of Hyaluronic Acid with or without Hyaluronidase: Experiments on Cell Cultures**
F. DURAN-REYNALS and M. L. DURAN-REYNALS. *Science* [*Science*] **115**, 40–41, Jan. 11, 1952. 4 refs.

The authors have investigated the effect of hyaluronic acid, alone or with hyaluronidase, on vaccinia virus cultivated in cell-containing medium of the Maitland type; 14 preparations of either hyaluronic acid or potassium hyaluronate, made from human umbilical cord or bovine vitreous humour, were used; they were sterilized by filtration, steaming, or autoclaving. About 200 different strains of vaccinia virus were tested; virus titre was estimated by intradermal inoculation of rabbits. At each passage 1·0 ml. of 1% hyaluronic acid or hyaluronidase in saline was added to 10·0 ml. of culture medium, giving a final concentration of about 1 in 1,100.

Results ranged from a slight decrease in titre to complete inactivation, and were affected by the following factors: (1) Source of preparation: hyaluronic acid from cattle vitreous humour had less inactivating power than that from human umbilical cord. (2) Concentration of solution: inactivating power was directly proportional. (3) Simultaneous addition of hyaluronidase: this produced a greater inactivating effect than with the same amount of hyaluronic acid alone. (4) The culture material employed (that is, supernatant fluid or cells) in carrying the passage: intracellular virus was evidently protected against hyaluronic acid even when combined with hyaluronidase; when cells were used for passage, the virus was inactivated in 2 experiments only, while virus was detected in the cells from cultures whose supernatant fluid had been completely cleared of virus. The authors conclude that the action of the polysaccharide preparation is on the virus and not the cell. (5) Strain of virus used: dermo-vaccine was far more resistant than the Levaditi neuro-vaccine.

These experiments were designed to imitate as closely as possible conditions found in the ground substance of mesenchyme, both in the concentration of hyaluronic acid and the presence of hyaluronidase to produce polymerization and hydrolysis. It is suggested that hyaluronic acid and possibly other polysaccharides of ground substance, especially after degradation during infection, may inactivate vaccinia virus and other infective agents. (Moore, working at the Sloan–Kettering Institute, has obtained similar results with Russian encephalitis virus.) If this is so then the ground substance, besides being a mechanical barrier, would also be a sterilizing barrier to the progress of infection.

Peter Story

26. **The Laboratory Diagnosis of Strongyloidiasis.** (Contribuição para o estudo do diagnóstico de laboratório da estrongiloidose)
J. O. COUTINHO, J. CROCE, R. CAMPOS, and V. AMATO NETO. *O Hospital* [*Hospital, Rio de J.*] **41**, 11–20, Jan., 1952. 2 figs., 28 refs.

In the State of São Paulo, Brazil, the incidence of infestation with the helminth *Strongyloides stercoralis* has been put as high as 35% of the population. Its diagnosis is therefore of some importance and the authors, before discussing their own investigations, tabulate and analyse the various diagnostic procedures. It would appear that there are many laboratory methods of making the diagnosis, and the authors investigated a large series to discover the most dependable routine method. Thus all the cases were submitted to duodenal intubation, and to faecal examination by Baermann's method, the latter giving a higher positive percentage.

A modification of Baermann's method is described. A glass funnel, in which gauze is placed, is used to filter a suspension of faeces in water at 40° C. The larvae, stained with Lugol's solution, can then be easily identified under a cover-slip; the larvae of ankylostomes are similar, but should not cause confusion. Of one series of 1,007 routine faecal examinations in unselected cases, 58·3% were positive; the authors state that this method gives correct results in 90·9% of cases and that it is superior to any other. If positive results are found on three

separate occasions the accuracy is then 100%. The negative results of a single examination are attributable to intermittent excretion of the larvae, as occurs with other intestinal parasites. Duodenal intubation is not so reliable, and is unpleasant for the patient. Direct examination of the faeces gave correct results in only 32·2% of cases. *Paul B. Woolley*

BACTERIA

27. **Experimental Human Salmonellosis—III. Pathogenicity of Strains of *Salmonella newport*, *Salmonella derby*, and *Salmonella bareilly* Obtained from Spray-dried Whole Egg**

N. B. McCULLOUGH and C. W. EISELE. *Journal of Infectious Diseases* [*J. infect. Dis.*] **89**, 209–213, Nov.–Dec., 1951. 2 refs.

Graduated doses of 3 strains of *Salmonella*—*Salm. newport*, *Salm. derby*, and *Salm. bareilly*—obtained from spray-dried egg were fed to groups of volunteers in a prison. The number of organisms and incidence of illness with *Salm. newport* were: 152,000, 1 in 6 men; 385,000, 1 in 8 men; and 1,350,000, 3 in 6 men; with *Salm. derby*: 138,000, 0 in 6; 705,000, 0 in 6; 1,655,000, 0 in 6; 6,400,000, 0 in 6; and 15,000,000, 3 in 6; with *Salm. bareilly*: 125,000, 1 in 6; 695,000, 2 in 6; and 1,700,000, 4 in 6. The incubation periods were 4 to 5 hours in 2 cases (both *Salm. derby*), 27 to 48 hours in 11 cases, 66 hours in 1 case, and 7 days in 1 case.

The clinical features varied from a mild, brief diarrhoea to severe gastro-enteritis with systemic disturbance. Isolation of the *Salmonella* type fed was effected from faecal cultures of 49 of the 68 volunteers. The period of excretion of the pathogen in the faeces was 1 to 7 days in 31 men, 8 to 14 days in 11 men, 15 to 21 days in 3 men, and over 3 weeks in 4 men. Agglutination titres rose two dilutions or more in 8 subjects, all of whom had become ill. *Joyce Wright*

28. **Experimental Human Salmonellosis—IV. Pathogenicity of Strains of *Salmonella pullorum* Obtained from Spray-dried Whole Egg**

N. B. McCULLOUGH and C. W. EISELE. *Journal of Infectious Diseases* [*J. infect. Dis.*] **89**, 259–265, Nov.–Dec., 1951. 4 refs.

In continuation of the work previously reported (see Abstract 27) graduated doses of *Salmonella* were fed as before to groups of volunteers in a prison; 4 strains of *Salm. pullorum* were used, 3 of which had been isolated from spray-dried egg and one from a human case of salmonellosis. Doses ranging from 1,300,000,000 to 10,000,000,000 organisms were required to produce illness, which developed in 27 out of 35 cases: in 8 after an incubation period of 10 hours or less, in 12 of 10 to 20 hours, and in 7 of 24 hours or more. The characteristic illness was a severe diarrhoea of sudden onset, with nausea and vomiting; in some cases high fever and prostration occurred. Recovery was rapid.

There was a rise in the agglutination titre of two dilutions or more in 21 of the cases. The organism was isolated from faecal cultures in 23 cases, but only during the 1st and 2nd days of illness. All the volunteers had received immunization against typhoid upon admission to the institution, and many had also received annual " booster shots ". Such immunization may have had a modifying effect on the character of the illness and on the size of the infective dose required to produce it. *Joyce Wright*

29. **Growth Inhibition of Tubercle Bacilli by Analogues of Biotin**

H. POPE. *Journal of Bacteriology* [*J. Bact.*] **63**, 39–45, Jan., 1952. 7 refs.

The effect of various analogues of biotin were examined both *in vitro* and *in vivo*. The experiments *in vitro* were carried out in Proskauer–Beck medium, the appearance and size of the pellicle after 6 weeks' growth being used in assessing the effect of the various compounds on the growth of H37Rv strain of *Mycobacterium tuberculosis*. For certain of the analogues Dubos's sorbitan monooleate medium without albumin was used, the turbidity being measured after 10 days. One of the analogues, 4-(imidazolidone-2)-caproic acid, was also tested in chick embryos infected with the A27 strain of *Myco. tuberculosis*, but was found to be ineffective in the concentrations employed.

Of the 6 analogues tested *in vitro*, 4-(imidazolidone-2)-caproic acid had the greatest inhibitory powers, 0·5 mg. per 100 ml. causing complete inhibition. Homobiotin prevented growth in concentrations of 10 mg. per 100 ml., norbiotin inhibited at 25 mg. per 100 ml., and hexahydro-2-oxo-4-hydroxybutyl-1-furo-(3:4)-imidazol at 10 mg. per 100 ml. Desthiobiotin and oxybiotin showed no inhibition at 100 mg. per 100 ml. Biotin neutralized all these inhibitors; desthiobiotin and oxybiotin neutralized 4-(imidazolidone-2)-caproic acid, and oxybiotin also neutralized homobiotin and norbiotin. Aspartic acid and sorbitan monooleate had no neutralizing effect.

From these results it is concluded that 4-(imidazolidone-2)-caproic acid inhibits growth by competing with an enzyme system which converts desthiobiotin to biotin, and that homobiotin probably prevents the conversion of biotin to its enzymatically active form. *R. J. Jennison*

30. ***Brucella* in Tissues Removed at Surgery**

L. A. WEED, D. C. DAHLIN, D. G. PUGH, and J. C. IVINS. *American Journal of Clinical Pathology* [*Amer. J. clin. Path.*] **22**, 10–21, Jan., 1952. 8 figs., 4 refs.

During the past 6 years at the Mayo Clinic detailed studies have been made on a large number of infected tissues removed at operation; it was found that the majority of lesions were caused by: (1) the tubercle bacillus; (2) some kind of mycotic organism; or (3) a species of *Brucella*. In this paper 13 cases of infection due to organisms of the genus *Brucella* are reported. Of these cases, 4 were of chronic infection of bone, 2 were of chronic prepatellar bursitis, and 2 were cases of chronic abscess of soft tissues, while the remaining

5 patients had visceral manifestations of brucellosis, one of whom was subjected to splenectomy on the mistaken diagnosis of congenital haemolytic jaundice, and another was subjected to thoracotomy for a granuloma of the lung.

It is concluded that "*Brucella* organisms may be isolated from surgical specimens when there is no obvious history or clinical course to suggest brucellosis. The agglutination reactions on serum are usually positive but may be negative in certain cases of chronic brucellosis. The gross and microscopic appearances of a lesion may be nonspecific or they may be strikingly similar to tuberculosis. Histologic examination alone is misleading in the diagnosis of chronic lesions due to *Brucella*. *Brucella* may be unrecognized as the cause of bursitis unless the organism is isolated by bacteriologic methods. Surgical removal of a localized lesion may be required as a supplement to chemotherapy, even though the diagnosis of brucellosis is already established." *A. G. Riddell*

IMMUNOLOGY

31. **Immune Responses in Human Volunteers upon Oral Administration of a Rodent-adapted Strain of Poliomyelitis Virus**

H. KOPROWSKI, G. A. JERVIS, and T. W. NORTON. *American Journal of Hygiene* [*Amer. J. Hyg.*] **55**, 108–126, Jan., 1952. 16 refs.

In this investigation suspensions of cotton-rat brain and spinal cord infected with the TN strain of rodent-adapted poliomyelitis virus were fed to 20 human volunteers. This strain had previously been shown to have a low pathogenicity for monkeys and to be non-pathogenic for one of the human volunteers. Cross-neutralization tests in mice and rats showed the TN strain to be identical with the Lansing type of virus.

There was no evidence of illness in any of the volunteers during an observation period of about a year. Stools were collected at intervals for 3 weeks following the injection of the virus, and examined for virus. Serum taken during the same period was titrated by the mouse neutralization method. Among the volunteers 17 were found to be non-immune to Lansing-type virus before feeding. In 12 non-immune cases virus was isolated from the stools one or more times after a single feeding of virus, and there was a prompt rise in serum antibody level. In 5 non-immune cases the antibody titre rose promptly, but virus was not isolated from the faeces. The 12 carriers were re-fed TN virus. In 10 no further virus was demonstrated in the stools; in the remaining 2 virus was found after 2 or 3 feedings, but further feeding produced no more virus. Of the 3 immune subjects 2 showed faecal virus, but none showed an increase in antibody titre. After human passage, the virus had the same pathogenicity for monkeys as before.

The results show that the presence of circulating neutralizing antibodies does not preclude the establishment of a carrier state with a homologous virus. The antibodies in the blood were type-specific as tested against the Brunhilde virus. *M. Lubran*

32. **Evaluation of Monovalent Influenza Virus Vaccines —I. Observations on Antibody Response following Vaccination**

G. MEIKLEJOHN, D. L. WEISS, R. I. SHRAGG, and E. H. LENNETTE. *American Journal of Hygiene* [*Amer. J. Hyg.*] **55**, 1–11, Jan., 1952. 4 figs., 20 refs.

The serological response to various influenza vaccines was studied in 2,151 U.S. Army recruits, mostly 17 to 20 years old, who had had no previous influenza vaccination. They were divided at random into 4 approximately equal groups which were vaccinated with Type A (PR8 strain), A-prime (FM1 strain), B (Lee strain), and (as a control) 0·1% formalin in saline respectively. All subjects were inoculated against the enteric fevers, tetanus, and smallpox at the same time. The change in antibody titre was measured after about 3 weeks, using agglutination-inhibition, mouse neutralization, and complement-fixation tests.

Titres increased much less than occurs in the disease. Vaccination with the PR8 strain produced an 8·3-fold increase in titre, with the FM1 strain a 3·4-fold increase, and with the Lee strain a 5·9-fold increase. Vaccination with the FM1 strain produced a 2·5-fold increase in titre against PR8, while vaccination with PR8 produced a 2·2-fold increase in titre against FM1. The distribution of titre was virtually unaltered in the saline controls.

The complement-fixation test showed a small increase in titre following vaccination. PR8 vaccine was not very effective in raising antibody titres against FM1 as measured by this test. In 14 cases vaccinated with FM1 parallel mouse neutralization and agglutination-inhibition tests showed poor correlation. The mouse test was more accurate in measuring antibody response to FM1 than the agglutination-inhibition technique. *M. Lubran*

33. **Evaluation of Monovalent Influenza Vaccines—II. Observations during an Influenza A-prime Epidemic**

G. MEIKLEJOHN, C. H. KEMPE, W. G. THALMAN, and E. H. LENNETTE. *American Journal of Hygiene* [*Amer. J. Hyg.*] **55**, 12–21, Jan., 1952. 3 figs., 10 refs.

An epidemic of influenza caused by an A-prime strain occurred among U.S. Army personnel some of whom had been inoculated 2 to 3 months previously with either FM1 (A-prime) vaccine, PR8 (A) vaccine, Lee (B) vaccine, or saline (see Abstract 32). Only those with positive serological reactions were considered to have influenza. The incidence of influenza in the 4 groups, which contained about 700 men each, was respectively 1·2% (A-prime), 3·1% (A), 4·0% (B), and 4·2% (saline), indicating a significant degree of protection obtained with the A-prime vaccine. Among 1,784 non-vaccinated soldiers the incidence of influenza was 5·0%.

Measurement of acute-phase antibody titres by the agglutination-inhibition method (FM1 strain) in 100 men who had not received influenza A or A-prime vaccine showed an incidence of influenza of 11% in those with titres of 8 or less, and an incidence of 1·5% in the remainder. No cases of influenza occurred when the acute-phase titre was 64 or more. These results suggest a close correlation between a low FM1 antibody titre and probability of clinical infection. *M. Lubran*

Pharmacology

34. **The Effect of the Ganglion-blocking Methonium Salts on Gastric Secretion and Motility**
A. W. KAY and A. N. SMITH. *Gastroenterology* [*Gastroenterology*] **18**, 503–517, Aug., 1951. 9 figs., 6 refs.

At the Western Infirmary, Glasgow, 4 of the polymethylene bistrimethylammonium series first described by Barlow and Ing were tested for their effects on gastric secretion and motility. The tetra-, penta-, hexa-, and hepta- compounds of methonium were injected intramuscularly (100 mg.) in 4 male patients with duodenal ulcer; hexamethonium caused the greatest inhibition of spontaneous acid secretion; in 3 of the patients it produced achlorhydria for 2 to 2½ hours. The longest inhibition of motility was also produced by hexamethonium, 100 mg. causing an inhibition for about 3 hours.

In a further study in 10 patients hexamethonium was shown to depress spontaneous secretion to anacidity for 2 to 3 hours and to reduce the gastric secretion after insulin-induced hypoglycaemia. Secretion due to histamine, alcohol, and meat extract was unaffected by the compound. Side-effects included severe blurring of vision in 3 cases and dryness of the mouth in 2 cases. Hypotension was severe enough to cause faintness in 5 subjects, but this could be controlled either by lying down or by muscular activity. *John R. Vane*

35. **Comparison of a Plain Methylcellulose with a Compound Bulk Laxative Tablet**
D. A. BERBERIAN, R. J. PAULY, and M. L. TAINTER. *Gastroenterology* [*Gastroenterology*] **20**, 143–148, Jan., 1952. 12 refs.

The authors, working at the Sterling–Winthrop Research Institute, New York, have compared the effects in 8 human subjects of two bulk-laxative tablets, one containing 0·5 g. methylcellulose and the other 0·4 g. of methylcellulose compounded with 0·1 g. of purified psyllium hemicellulose. By means of the stool-weight method of evaluation, the compound tablet was found to have up to 87% more moisture-retaining and bulk-forming power than the simple methylcellulose tablet; 6 compound tablets had approximately the same effect as 9 simple tablets, the increased bulk of stool being observed from the first day of medication with the former, while with the latter preparation there was a lag of 2 days. *I. Ansell*

36. **A Clinical Evaluation of Certain Bulk and Irritant Laxatives**
L. J. CASS and L. P. WOLF. *Gastroenterology* [*Gastroenterology*] **20**, 149–157, Jan., 1952. 6 refs.

In investigations in the Department of Hygiene, Harvard University, the authors studied the effects of two bulk laxatives, psyllium seed coat and methylcellulose, as contrasted with various cathartics and laxatives in hospitalized elderly patients with chronic diseases and extreme bowel difficulties. A group of non-institutional and general-hospital patients with mild constipation were also studied. It was demonstrated that psyllium-seed preparations were more effective than methylcellulose, and were also superior to laxatives such as " milk of magnesia ", mineral oil, cascara, and a phenolphthalein–ipecacuanha preparation. In severe cases of constipation 73% to 82% of the patients were improved by giving psyllium, which acts as a natural, unabsorbable lubricant without side-effects and may be used indefinitely in intractable cases. *I. Ansell*

37. **The Mechanism of the Vasomotor Action of Quinidine**
GO LU. *Journal of Pharmacology and Experimental Therapeutics* [*J. Pharmacol.*] **103**, 441–449, Dec., 1951. 3 figs., 17 refs.

The fall in blood pressure occurring upon the intravenous injection of quinidine was investigated in dogs at the Stanford University School of Medicine, San Francisco. No change in cardiac output (measured by Fick's principle) was observed, but an increase in leg volume was noted. Thus the fall in blood pressure was attributed to peripheral vasodilatation. Further experiments indicated that the vasodilatation was partly due to a direct action on vascular smooth muscle and partly to a depression of the " sympathetic receptors ", or even sympathetic ganglia. *John R. Vane*

38. (*a*) **Experimental Studies of the Effect of the Synthetic Anticoagulant " Thrombocid " on the Circulation in Animals.** (Tierexperimentelle Untersuchungen zur Kreislaufwirkung des synthetischen Anticoagulans Thrombocid). (*b*) **Studies of the Mode of Action of the Component of " Thrombocid " Affecting the Circulation.** (Untersuchungen über den Wirkungsmechanismus der kreislaufaktiven Thrombocidkomponente)
J. KONCZ and E. BÜCHERL. *Archiv für Klinische Chirurgie* [*Arch. klin. Chir.*] **271**, 27–41, 1952. 8 figs., 8 refs.

Clinical experience with " thrombocid ", a heparin-like synthetic anticoagulant, has suggested that the drug also has some effect on the circulation.

In the first of these two papers from the University of Göttingen are described experiments in anaesthetized dogs in which arterial blood pressure and blood flow in the femoral and mesenteric veins were recorded. Blood flow was measured by a thermostromuhr. Intravenous injection of 1 ml. of thrombocid per kg. body weight had no effect on circulation in 2 normal animals. In 9 other dogs 25% of the blood was removed by bleeding before injecting the thrombocid. In 8 of these animals the rate of flow in both veins increased by 50 to 80% and there was a variable slight fall in blood pressure. It is held that enhanced vascular tone after haemorrhage probably

accounts for the increased sensitivity of the vessels. Similar effects were produced by the intra-arterial injection of 1 ml. of thrombocid, which probably acts on the arterioles.

The vasodilator effect of thrombocid is also shown in the results reported in the second paper. A dog's hind limb was perfused at a constant rate with blood from a second dog. Thrombocid added to the perfusion caused a rapid and sustained fall in the perfusion pressure in the hind limb. Acute denervation of the leg did not alter the effect. Analysis of records of arterio-venous oxygen differences in the hind limb showed that this vasodilatation was accompanied by an insignificant reduction in oxygen usage in the limb. It is considered unlikely that changes in capillary flow are responsible for the vasodilatation, which, it is suggested, is due to a direct action of thrombocid on arteriolar muscle.

It is stated that a fuller description of the perfusion apparatus is to be published elsewhere.

Derek R. Wood

39. **Demonstration of a Previously Unknown Naturally Occurring Substance with Antihistamine Activity (Resistin).** (Versuche zum Nachweis eines im Organismus entstehenden, bisher unbekannten Stoffes mit Antihistaminwirkung (Resistin))

S. KARÁDY, A. KOVÁCS, J. KOVÁCS, M. SZERDAHELYI, and P. VAJDA. *Archives Internationales de Pharmacodynamie et de Thérapie* [*Arch. int. Pharmacodyn.*] **88**, 253–267, Dec. 1, 1951. 9 figs., 8 refs.

Earlier experiments had suggested to the authors that a substance with antihistamine activity might be produced by rat liver, as rats acquired resistance to the effects of various experimental procedures each of which liberates histamine. The present report indicates that such a naturally occurring material, named " resistin ", may be found in liver, spleen, lung, blood, and urine of normal and also of " resistant " men, rats, dogs, and guinea-pigs. Details of the extraction procedure are given.

The antihistamine activity of resistin was demonstrated on isolated guinea-pig ileum. Greater activity was found in liver extracts from " resistant " than from normal animals and man. The activity was distinguished pharmacologically from that of adrenaline or noradrenaline, and was more specific against histamine than against acetylcholine or barium. It was not considered to be due to ketosteroids of possible adrenocortical origin, since urine extracts which are ketosteroid-free retain their resistin activity. Further work on the material is in progress.

Derek R. Wood

40. **Is Hypoprothrombinemia Caused by Deficiency of Vitamin K Different from that of Dicumarol?**

A. J. QUICK, C. V. HUSSEY, and G. E. COLLENTINE. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **79**, 131–133, Jan., 1952. 16 refs.

On mixing equal volumes of plasma obtained from a dog deprived of vitamin K and plasma from a dog receiving dicoumarol, the mixture has a prothrombin time that corresponds to the expected average based on the standard prothrombin time curve. It is concluded that in the dog the increased prothrombin time in both avitaminosis K and after dicoumarol is due to a decrease of prothrombin.—[Authors' summary.]

41. **Action of Certain Drugs on the Sweat Glands.** (Effet pharmacodynamique de quelques substances sur la glande sudoripare)

L. MANUILA. *Schweizerische Medizinische Wochenschrift* [*Schweiz. med. Wschr.*] **82**, 104–106, Feb. 2, 1952. 1 fig., 9 refs.

The author has developed a sensitive technique whereby the presence and degree of sweating may be determined. A dry transparent adhesive tape is treated with the minimum quantity of a dry mixture of potassium ferrocyanate and ferric sulphate which will adhere to it, and it is then applied to the skin area. Sweating causes the production of Prussian blue, which leaves a permanent record of each drop and an indication of its size. Iontophoresis of a 1% solution of pilocarpine, of eserine, or of acetylcholine provoked a secretion of sweat which was inhibited by atropine. Likewise iontophoresis of 0·1% solution of adrenaline produced localized sweating. This result was obtained in the majority of trials, and when failure occurred repetition of the test on the same person at another time was always successful. Ephedrine did not induce any secretion.

The interpretation put upon these findings is that human sweat glands have a double innervation—parasympathetic and sympathetic. [There is, of course, the possibility of a double sympathetic innervation—cholinergic and adrenergic.] The secretion provoked by adrenaline is not inhibited by ergot, but is occasionally inhibited by atropine. Tolazoline does not cause a secretion, and neither hyaluronidase (spreading factor) nor hyperaemia modified the secretion after either agent.

James D. P. Graham

42. **The Analysis of the Mode of Action of Curare on Neuromuscular Transmission; the Effect of Temperature Changes**

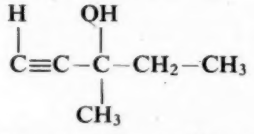
P. E. B. HOLMES, D. J. JENDEN, and D. B. TAYLOR. *Journal of Pharmacology and Experimental Therapeutics* [*J. Pharmacol.*] **103**, 382–402, Dec., 1951. 11 figs., 14 refs.

The degree of block of neuromuscular transmission in a rat phrenic-nerve–diaphragm preparation treated with D-tubocurarine was studied by stimulating the nerve and the muscle alternately and comparing the responses. When a given concentration of the drug was left in contact with the preparation for an hour, equilibrium was reached between the curare and its receptors in the tissue to give a steady degree of block. The degree of block was the same whether the previous concentration of the drug in the bath had been higher or lower than the one tested. When the temperature of the bath was lowered, the degree of block produced by a given concentration of curare was reduced and reached a minimum at 26° C. Below 26° C. the degree of block again increased, and at 10° C. a 50% block was produced without the addition of any curare at all.

The authors have made a careful study of the equilibrium and kinetics of the effect. They conclude that the paralysing action of curare has two components: (*a*) the rate at which the drug diffuses into the muscle to reach the motor end-plates controls the rate at which paralysis is produced; and (*b*) a truly reversible reaction between the drug and its receptors determines the degree of block produced at equilibrium. The curve relating percentage block to concentration of drug shows that the sensitivities of the motor end-plates in the tissue are normally distributed. For a block which is just complete at 30° C. the mean sensitivity of the end-plates is to 0·23 μg. of D-tubocurarine per ml., with a standard deviation of ±0·085. The effect of a change of temperature is to alter the sensitivity of the end-plate population as a whole without affecting the distribution of sensitivity within the population. By using concentrations of curare just large enough to cause paralysis at all temperatures, it was shown that the speed of paralysis was controlled by the rate of diffusion into the preparation; this in turn was proportional to the diffusion gradient. Within the temperature range of 15° to 38° C. the rates of diffusion in and out of the muscle were equal. When repeated experiments were made on the same preparation at constant temperature it was observed that the speed of paralysis successively increased. Care was taken to correct for this drift by measuring rates of paralysis with both ascending and descending concentrations of drug, or by measuring the response to a standard amount of drug after every test concentration. The corrected diffusion velocities to the site of action were calculated to have an activation energy of 5,000 Calories per degree per mole. When very high concentrations of drug were used the rates of paralysis could not be explained by simple diffusion theory. *L. F. Goodwin*

43. **Methylparafynol—a New Type Hypnotic. Preliminary Report on its Therapeutic Efficacy and Toxicity**
H. L. HIRSH and W. H. ORSINGER. *American Practitioner* [*Amer. Practit., Phila.*] **3**, 23–26, Jan., 1952.

A new hypnotic, methylparafynol (3-methyl-pentyne-ol-3; " dormison "), which has the structural formula



and has been given in doses of 100 to 800 mg. to 276 patients, produced " hangover " effects in only 5, and nausea or unpleasant taste in the mouth in 3 patients. Of 195 of the patients who received doses of 100 to 500 mg. for 1 to 8 weeks, 78% fell asleep within 2 hours. The duration of sleep in 86% of 120 patients interviewed was 5 or more hours, and 77% were satisfied with this sleep with regard to onset, duration, and restfulness. The optimum dosage was 300 to 500 mg. Poorer results were obtained in patients with severe anxiety, acute agitation, delirium tremens, pain, cough, or febrile states, and larger doses were required. No effects on blood pressure, pulse, respiration, blood, urine, electrocardiogram, and liver and kidney function were noted.

The authors conclude that methylparafynol is a safe, non-toxic, efficient, rapid, short-acting hypnotic drug.
I. Ansell

44. **Further Studies on the Effectiveness of Various Drugs against Airsickness**
H. I. CHINN, O. H. WALTRIP, and H. W. MASSENGALE. *Journal of Aviation Medicine* [*J. Aviat. Med.*] **22**, 535–539, Dec., 1951. 7 refs.

The drugs used in this study of the prevention of airsickness were: a mixture of " benadryl " (diphenhydramine), 25 mg., with scopolamine hydrobromide, 0·35 mg.; " perazil ", 50 mg.; scopolamine aminoxide, 2·0 mg.; " lergigan " (an antihistaminic), 25 mg.; and a mixture of benadryl, 25 mg., with scopolamine aminoxide, 1·0 mg. A placebo was included as a control. The preparations were tested in trainees with considerable flying experience and in a group with little or no flying experience.

The incidence of mild and severe nausea, of actual vomiting, and of side-effects was noted in each case. Lergigan and the benadryl–scopolamine–hydrobromide mixture were the most effective in combating airsickness, followed by the two preparations of scopolamine aminoxide. Perazil was relatively ineffective. Dry mouth and blurred vision were noted particularly with the more effective preparations, but in no case were side-effects very marked. *P. Howard*

45. **Further Experiments on the Prevention of Motion Sickness**
E. M. GLASER and G. R. HERVEY. *Lancet* [*Lancet*] **1**, 490–492, March 8, 1952. 1 fig., 6 refs.

Experiments were carried out to determine whether, in the prevention of motion sickness, the effectiveness of large doses of promethazine hydrochloride (" phenergan ") would equal or surpass that of hyoscine hydrobromide, and whether combinations of promethazine and hyoscine would be more effective than either drug alone. The subjects were soldiers from different units, and the experiments were carried out in a large swimming bath with artificial waves. The following drugs were tried: (1) L-hyoscine hydrobromide, 1 mg.; (2) promethazine hydrochloride, 35 mg.; (3) hyoscine hydrobromide, 1 mg., with promethazine hydrochloride, 25 mg.; (4) hyoscine hydrobromide, 0·65 mg., with promethazine hydrochloride, 15 mg.; (5) hyoscine hydrobromide, 0·65 mg., with promethazine hydrochloride, 15 mg., and mannitol hexanitrate, 50 mg.; and (6) lactose as a dummy substance.

The authors found that hyoscine alone and in the above combinations was more effective than 35 mg. of promethazine, and the effectiveness of promethazine was about the same as that produced by 25 mg. of the drug in one of their previous experiments (*Lancet*, 1951, **2**, 749). A comparison between the effects of hyoscine and combinations of hyoscine with promethazine yielded no conclusive results. The authors also observed that 1 mg. of hyoscine hydrobromide, if taken 5 to 10 minutes before the motion started, effectively prevented the sickness, and that glyceryl trinitrate in 0·6-mg. doses did not stop vomiting in men who felt sick on the floats.
S. Karani

Chemotherapy

46. **Chemotherapy of Amebic Hepatitis in Hamsters with Emetine, Chloroquine, Amodiaquin (Camoquin), Quinacrine and Other Drugs**
P. E. THOMPSON and J. W. REINERTSON. *American Journal of Tropical Medicine* [*Amer. J. trop. Med.*] **31**, 707–717, Nov., 1951. 18 refs.

Experimental amoebic hepatitis was produced in hamsters by direct injection into the liver of 24-hour cultures of *Entamoeba histolytica* together with concomitant bacteria. Drugs were administered first about 5 hours after the injection and subsequently twice daily for a total period of 4 days. The results of treatment were assessed 92 hours after infection, when the animals were killed and examined for the presence of amoebae in the lesions, and the mean weight and size of the latter were measured. The development of hepatic lesions was suppressed by emetine given intramuscularly, and by chloroquine, amodiaquin, and "quinacrine" (mepacrine) given by mouth. In the case of quinacrine there was 97% reduction in the weight of the lesion and the amoebae were eradicated. Oral administration of carbarsone, chloramphenicol, and aureomycin produced only insignificant suppression of the lesions, whereas penicillin and dihydrostreptomycin, administered subcutaneously together, failed to produce any effect.

C. A. Hoare

47. **Study of an Antibiotic Substance—"Mycoine C".** (Étude d'une substance antibiotique—la "mycoïne C") C. DULONG DE ROSNAY, C. MARTIN-DUPONT, and R. JENSEN. *Journal de Médecine de Bordeaux et du Sud-Ouest* [*J. Méd. Bordeaux*] **129**, 189–199, March, 1952. 3 figs., 17 refs.

48. **Terramycin in Infections in Infants and Children**
B. WOLMAN and A. HOLZEL. *British Medical Journal* [*Brit. med. J.*] **1**, 419–420, Feb. 23, 1952. 11 refs.

Terramycin was given orally to 66 infants and young children suffering from a number of infective conditions. The dosage used was 50 mg. per lb. (110 mg. per kg.) body weight per day for 7 days, and this was given in divided doses 6-hourly. Of 35 patients under the age of 4 years suffering from pneumonia who were treated with the drug, in 30 the temperature fell to normal within 48 hours and the general condition improved; one patient with pneumonia due to Friedländer's bacillus died. In 10 children with upper respiratory tract infections and 6 children with tonsillitis clinical improvement occurred within 24 hours. When the drug was given to 3 children with chronic pyuria the urine quickly became and remained sterile. Conjunctivitis associated with coagulase-positive *Staphylococcus aureus* responded satisfactorily when terramycin was applied locally in 12 cases. The drug has no apparent depressant action on the bone marrow, but the development of skin rashes has been reported.

[Many of the conditions treated would probably have responded to less expensive drugs. Assessment of the value of terramycin will have to await further and more critical trials, in which a control group of cases should be used.] *R. M. Todd*

49. **Chloramphenicol and Terramycin in the Treatment of *Salmonella* and *Shigella* Infections**
R. H. KUNSTADTER, A. MILZER, and B. M. KAGAN. *Journal of Pediatrics* [*J. Pediat.*] **39**, 687–697, Dec., 1951. 20 refs.

After detailing previous work on the response of *Salmonella* infections to antibiotics and sulphonamides the authors record comparative sensitivity tests *in vitro* on different species and strains isolated from stools, and describe the results of treating 10 cases of *Salmonella* and 4 of *Shigella* infection with antibiotics, particularly chloramphenicol and terramycin.

The sensitivity *in vitro* was assessed by serial tube dilution methods. Strains from stool specimens of 62 individuals of all ages were examined in addition to those isolated from the 14 patients. Salmonellae were recovered in 24 and shigellae in 38 instances (many from apparently healthy individuals). The *Salmonella* species included *Salm. give* (4), *Salm. bareilly* (10), *Salm. montevideo* (2), *Salm. typhi-murium* (2), *Salm. oranienburg* (3), *Salm. javiana* (1), and *Salm. enteritidis* (2). Their sensitivity to streptomycin varied from under 10 to over 20 μg. per ml., to chloramphenicol from 2 to over 6 μg. per ml., and to terramycin from 2 to 8 μg. per ml. Of the 38 *Shigella* cultures, 35 were *Sh. alkalescens*, 2 were *Sh. paradysenteriae* Flexner (I and II), and one was *Sh. paradysenteriae* Boyd 88. The majority were sensitive to less than 10 μg. streptomycin per ml., 6 μg. chloramphenicol per ml., and 2 μg. terramycin per ml.

The 10 patients with *Salmonella* infections included 8 children, aged 4 months to 11 years, and 2 adults; 5 were treated with chloramphenicol in doses up to 250 mg. 4-hourly for 6 days, which was successful in 3, 2 of whom had not responded to "sulphasuxidine" and "sulphathalidine"; one was later successfully treated with terramycin (250 mg. 4-hourly for 6 days), and one with terramycin and chloramphenicol (250 mg. of each 8-hourly for 7 days); 4 were successfully treated with terramycin in doses up to 500 mg. 6-hourly for 14 days, one of whom had not responded to chloramphenicol and one to sulphonamides. One adult patient had negative stool cultures only after prolonged (18 months') intensive treatment with aureomycin, chloramphenicol, and terramycin, both separately and in combination.

The 4 children with *Shigella* infection due to *Sh. alkalescens* (2) and *Sh. paradysenteriae* (Boyd 88 and

Flexner IV) were variously treated; one failed to respond to sulphathiazole and chloramphenicol, but was cured with polymyxin B (150 mg. orally 4-hourly for 7 days), and one responded to sulphasuxidine but relapsed and became negative after terramycin treatment (250 mg. 8-hourly for 7 days). The remaining 2 children responded to terramycin alone (250 mg. 6- or 8-hourly for 8 or 14 days.).

An addendum records the successful treatment of a *Salm. typhi-murium* infection in a 2½-year-old boy with terramycin (250 mg. 6-hourly for 6 days); cultures from the stools were negative on the 2nd, 3rd, and 28th days.

Malcolm Woodbine

50. Reticulin in Experimental Tuberculosis of Guinea Pigs

S. HOSOYA, M. SOEDA, N. KOMATSU, K. OKADA, N. HARA, Y. SONODA, and R. ARAI. *Japanese Journal of Experimental Medicine* [*Jap. J. exp. Med.*] **21**, 165–171, July, 1951. 1 fig., 2 refs.

Reticulin is a new antibiotic produced from *Streptomyces reticuli*, which has been reported to be effective against Gram-positive, Gram-negative, and acid-fast micro-organisms. Its antimicrobial range is similar to that of streptomycin. The purification of reticulin and its effect on experimental tuberculosis in guinea-pigs is described. Three groups of 10 guinea-pigs each were used: a control group, a group receiving 5 mg. reticulin daily, and a group receiving 10 mg. daily. Quantitative cultivation tests for tubercle bacilli were carried out; the results are recorded in 2 tables. It is claimed that reticulin has been shown to effect a marked inhibition of experimental tuberculosis in guinea-pigs [but examination of the tabulated data leaves this in some doubt].

A. D. Macrae

51 (*a*). N:N′-Dibenzylethylenediamine Penicillin: a New Repository Form of Penicillin

W. ELIAS, A. H. PRICE, and H. J. MERRION. *Antibiotics and Chemotherapy* [*Antibiot. and Chemother.*] **1**, 491–498, 1951. 3 refs.

51 (*b*). N:N′-Dibenzylethylenediamine Penicillin: Preparation and Properties

J. L. SZABO, C. D. EDWARDS, and W. F. BRUCE. *Antibiotics and Chemotherapy* [*Antibiot. and Chemother.*] **1**, 499–503, Nov., 1951. 6 refs.

51 (*c*). The Toxicity of N:N′-Dibenzylethylenediamine (DBED) and DBED Dipenicillin

J. SEIFTER, J. M. GLASSMAN, A. J. BEGANY, and A. BLUMENTHAL. *Antibiotics and Chemotherapy* [*Antibiot. and Chemother.*] **1**, 504–508, Nov., 1951.

Some properties of a new salt of penicillin, N : N′-dibenzylethylenediamine penicillin (DBED dipenicillin), are described in the first paper. Stability tests gave results comparable to those obtained with procaine penicillin. When a single dose of 300,000 units in aqueous suspension was injected intramuscularly in human subjects, penicillin was detectable in the blood for at least 168 hours. When this dose was fortified with 100,000 units of crystalline benzyl penicillin higher initial concentrations persisted for the first 24 hours. As DBED dipenicillin is tasteless a palatable aqueous suspension can be prepared; a detectable level of penicillin was maintained in the blood by oral administration every 4 hours. Table IX [which is not referred to in the text] shows that when 2·5 mega units of an aqueous suspension was given in a single intramuscular injection penicillin could be detected in the serum for as long as 360 hours in one case. In only one out of 8 cases was no penicillin found after 216 hours.

The preparation of DBED dipenicillin is described in the second paper. This can be brought about by mixing an aqueous solution of its diacetate with an aqueous solution of potassium benzyl penicillin. Its physical and chemical properties indicate that it is composed of two molecules of penicillin to one of base.

In the third paper are described the results of experiments to determine the toxicity of DBED dipenicillin. It was found to be 25% more toxic than procaine penicillin by intra-abdominal injection in mice, but on intragastric administration there was no difference in toxicity. It produced less nausea and vomiting on intragastric administration in dogs. It was no more irritating than procaine penicillin to ocular mucosae, skin, and muscle. Its local analgesic action compared favourably with that of procaine hydrochloride.

A. W. H. Foxell

52. Streptococcal Bacteriostatic Antibody in Patients Treated with Penicillin

G. DAJKOS and L. WEINSTEIN. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **78**, 160–163, Oct., 1951. 19 refs.

The formation of bacteriostatic antibody was studied in patients with scarlet fever who were being given intramuscular or oral penicillin. Antibacterial antibody formation was completely suppressed in 12 patients receiving 250,000 units of penicillin intramuscularly every 12 hours for 10 days. With lower doses, or oral administration, some patients developed bacteriostatic antibody activity.

The authors conclude that because of the failure to develop type-specific antibacterial antibody for *Streptococcus* following penicillin therapy, the risk of subsequent infection by homologous serological types is increased.

John R. Vane

53. Combined Effect of Streptomycin + Penicillin, Streptomycin + Sulfathiazole and Streptomycin + *para*-Aminosalicylic Acid (PAS) on Tubercle Bacilli. [In English]

E. ESPERSEN. *Acta Pathologica et Microbiologica Scandinavica* [*Acta path. microbiol. scand.*] **29**, 350–356, 1951. 15 refs.

These studies were carried out *in vitro* in fluid Dubos medium on a virulent strain of human tubercle bacilli (E_5) employing streptomycin and a crystalline sodium salt of benzyl penicillin containing about 1,650 units per mg. The controls were a series of tubes with streptomycin concentrations of 0, 1/4, 1/8, 1/16, 1/32, 1/64, and 1/128 unit per ml. Growth was recorded at 7, 14, 21, and 28 days in arbitrary units (+ to +++).

In the investigation of the combined effects of streptomycin and penicillin, 10, 20, 40, and 80 units of penicillin were added to four groups of tubes with the same streptomycin concentration. All tubes were inoculated with one loopful of a 14-day culture of E_5. A pronounced synergistic effect was obtained, 1/32 unit of streptomycin + 40 units of penicillin per ml. giving complete inhibition. A similar experimental design was employed to show a synergistic effect between streptomycin and sulphathiazole, and between streptomycin and PAS. 1/32 unit streptomycin + 5 mg. sulphathiazole and 1/32 unit streptomycin + 0·05 mg. PAS per ml. giving complete inhibition of growth.

Norval Taylor

54. **The Effect on Experimental Tuberculous Infections of Streptomycin Combined with Congo Red to Form a Substance of Well-defined Chemical Structure.** (Ricerche sperimentali sull'associazione rosso congo–streptomicina, uniti in un sale a struttura chimica ben definita, nell'infezione tubercolare)
G. Pescetti and E. Destefanis. *Minerva Medica* [*Minerva med., Torino*] **1**, 189–196, Feb. 2, 1952. 8 figs., 25 refs.

Some tubercle bacilli are resistant to streptomycin; others may be so placed that the antibiotic cannot reach them owing to the presence, for example, of caseous material. Congo red, an electro-negative colloid, has an affinity for the organism and penetrates readily to it. This paper describes an attempt to combine the desirable features of both substances by injecting a suspension of the fine coloured granules which separate out when streptomycin and a solution of Congo red are mixed. The complex is not soluble in water and is stable. *In vitro* the antibacterial activity of the complex and of streptomycin were equal in potency when tested against virulent tubercle bacilli.

Groups of guinea-pigs were then infected with standard doses of tubercle bacilli and treated for 123 days. The untreated animals and those treated with Congo red intravascularly all died of generalized tuberculosis, one-quarter of those treated with streptomycin alone also died, but none of those given the same amount of streptomycin combined with Congo red died. By the end of the experiment (123 days after cessation of treatment) there was a marked superiority in weight in those animals given the complex. All control animals and those treated with Congo red became tuberculin positive. Less than half of those given streptomycin alone were negative reactors, whereas all those given the complex gave no reaction. There was no evidence of blood dyscrasia after treatment. Histopathological examinations confirmed the observed differences in these animals. The control series showed gross tuberculous lesions; those treated with the dye–antibiotic complex had no evidence of tuberculosis, but showed small perivascular infiltrations, often eosinophilic in type. After cessation of therapy infected guinea-pigs relapsed, whether treated initially with streptomycin alone or with the complex, but in the latter case the relapse was milder, slower to develop, and the lesions of a more fibrous and less caseous type and scar formation was good. It is considered that these results warrant clinical trial of the dye-complex in human infections.

James D. P. Graham

55. **The Toxic Effect of Streptomycin on the Vestibular and Cochlear Apparatus. An Experimental Study on Cats.** [In English]
K. Berg. *Acta Oto-laryngologica* [*Acta oto-laryng., Stockh.*] Suppl. 97, 1–77, 1951. 41 figs., 44 refs.

56. **The Toxic Effects of Streptomycin Compounds with Special Reference to Deafness**
D. H. Garrow. *Great Ormond Street Journal* [*Gt Ormond Str. J.*] No. 2, 133–136, Dec., 1951. 1 fig., 15 refs.

57. **The Evaluation of Chloromycetin Palmitate**
J. J. Finn and L. W. Kane. *Bulletin of the New England Medical Center* [*Bull. New England med. Center*] **13**, 241–243, Dec., 1951.

Chloromycetin [chloramphenicol] palmitate is a palatable, well tolerated, and easily administered chloromycetin ester, especially useful in pediatric cases. Detectable blood levels are obtained within one-half hour. Although peak levels are not as high as those seen after a single dose of an equivalent amount of crystalline chloromycetin, detectable levels continue for as long as 12 hours after administration of a single dose. A cumulative effect is obtained when the ester is administered every 4 to 6 hours, resulting in blood levels that may be as high as those seen with crystalline chloromycetin.

The clinical response in 35 cases of various infections that were treated with chloromycetin palmitate was as good as that anticipated with the crystalline material.—[Authors' summary.]

58. **Toxicological Aspects of Chloramphenicol.** (La cloromicetina nei suoi aspetti tossicologici)
G. Belloni. *Omnia Therapeutica* [*Omnia therap., Pisa*] Suppl. 3, 1–71, 1951. 7 figs., bibliography.

59. **Studies on the Synthesis and the Chemotherapeutic Effects of *p*-Hydrazinophenylsulfaguanidine on Experimental Tuberculosis**
Y. Takeda, Y. Maejima, and M. Okano. *Japanese Journal of Experimental Medicine* [*Jap. J. exp. Med.*] **21**, 173–178, July, 1951. 5 refs.

The synthesis of *p*-hydrazinophenylsulphaguanidine and its low toxicity in mice as compared with phenylhydrazine or *p*-hydrazinobenzenesulphonamide are reported. The results, which are tabulated, show that its administration to guinea-pigs did not result in anaemia either in control animals or in animals experimentally infected with tuberculosis. In the latter, changes in the lymph nodes and viscera were less marked than in the controls, indicating some benefit from treatment.

A. D. Macrae

Industrial Medicine

60. **Cancer of Skin and Occupational Trauma**
J. G. DOWNING. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 245–252, Jan. 26, 1952. 8 figs., 19 refs.

The author reviews the present position of the notification of industrial disease in the United States. [It is obvious from his remarks that this group of diseases is not so widely recognized there as in Great Britain, and as many of the facts he mentions are already well known in Europe it would not be profitable to discuss them.] The recorded cases of occupational skin cancer in the U.S.A. are extremely few: 71 cases due to tar and pitch, 62 to grease and oil, 45 to exposure to *x* rays, and 18 to arsenic. In the author's view the small number is because so few have been notified in the past. Several case histories of carcinoma of the skin due to tar, arsenic, and grease seen by him personally are given.

Physical trauma as a cause of skin cancer is much more difficult to assess, and the aetiology is not so well understood as in the previous group. The author records a number of cases; in the majority of these the trauma was repetitive, or else the cancer arose at the site of a burn received many years before. These cases are particularly difficult to assess legally. Finally, the urgent need for abolishing risks from the use of known carcinogenic agents is emphasized. *E. C. B. Butler*

61. **Visual and Orthopedic Defects in Civil Airmen**
D. M. GILFORD and W. R. STOVALL. *Journal of Aviation Medicine* [*J. Aviat. Med.*] **22**, 442–455 and 558, Dec., 1951. 1 fig.

This paper is concerned with civil pilots who, despite some visual or orthopaedic handicap, have demonstrated their fitness to fly by undergoing flight tests under medical supervision; 145 such pilots, the majority of whom had some defect of vision, were matched with a similar number of normal controls of about the same age and with approximately the same total flying experience. The incidence of accidents from all causes was then compared in the two groups.

The handicapped pilots suffered a total of 29 accidents affecting 27 pilots compared with 13 accidents affecting 11 pilots among the able-bodied group. When corrected for time of exposure these results showed that the defective pilots had an accident rate of 1·82 times that of the control group. Detailed analysis of the accidents, however, revealed that in very few cases did the physical defect bear any causal relationship to the accident.
P. Howard

62. **Acoustic Trauma in Aircraft Maintenance Workers**
E. GUILD. *Journal of Aviation Medicine* [*J. Aviat. Med.*] **22**, 477–490, Dec., 1951. 3 figs., 7 refs.

Pure-tone audiograms for 11 different frequencies were determined in the following 4 groups of workers: mechanics concerned with conventional-type aircraft, mechanics dealing with jet engines, pilots with considerable flying experience, and personnel experiencing engine noise only as a background. Air-conduction studies were supplemented by bone-conduction studies in those subjects showing significant loss of acuity. The groups were roughly similar in size, age distribution, and duration of exposure, except that few pilots were less than 30 years of age.

For subjects below the age of 25 there was little over-all difference between the groups. At intermediate ages all groups showed diminished acuity to the higher frequencies, but the 2 groups of mechanics had a lower average auditory acuity than the normal, and this loss was more marked in mechanics and pilots working with jet engines than in those dealing with conventional-type aircraft. The differences tended to disappear with increasing age, but defects appeared earlier and were more marked in those subjected to noise. Subjects over 34 exhibited a comparable loss of acuity in all groups.

It is concluded that definite impairment of hearing may result from exposure to engine noise, and that jet engines impose a greater hazard than do conventional types. The marked loss of acuity found in the group of pilots might be due to their greater average age and to their longer exposure to noise. *P. Howard*

63. **Further Investigations on Chronic Cadmium Poisoning. A Study on Rabbits with Radioactive Cadmium**
L. FRIBERG. *Archives of Industrial Hygiene and Occupational Medicine* [*Arch. industr. Hyg. occup. Med.*] **5**, 30–36, Jan., 1952. 2 figs., 8 refs.

In this study 4 rabbits (Group 1) each received a daily dose of cadmium sulphate solution in water on 6 days a week for 10 weeks, the dose being 0·65 mg. of metallic cadmium per kg. body weight. This contained the radioactive isotope ^{115}Cd with a half-life of 43 days. At the start of the experiment the radioactivity measured about 0·25 mc. per g. of cadmium. The solution was given by subcutaneous injection and the total cadmium given was 40 mg. per kg. Another group of 4 rabbits (Group 2) was similarly treated, but for 4 weeks only; the total cadmium given was 15 mg. per kg.

Little cadmium was found in the urine during the first 6 weeks, but large quantities were excreted by the kidneys during the 7th and 8th weeks, up to 50 or 100 times the normal quantity. This coincided with the appearance in the urine of a protein of low molecular weight. Evidence is given indicating that a part of the cadmium may be bound to this protein. The animals were then killed by bleeding. The blood of the animals in Group 1 contained cadmium to the extent of 0·7 to 1·3 μg. per ml., all of which was in the erythrocytes; none was found in the plasma. Cadmium was found to be present in all organs of the body in both groups of rabbits (precise quantities are given) with accumulations in the liver, kidney, pancreas, and spleen. *M. A. Dobbin Crawford*

Forensic Medicine and Toxicology

64. **Identification of Seminal Stains by the Determination of Acid Phosphatase.** (Důkaz spermatu ve skvrnách. Určenićspermatu průkazem kyselých fosfatas)
J. TESAR. *Časopis Lékařů Českých* [*Čas. Lék. čes.*] **90**, 1454–1457, Dec. 7, 1951. 9 refs.

Methods of identifying stains due to seminal fluid on garments by demonstration of the whole spermatozoon with various dyes and by microcrystallography are non-specific. The microchemical test described in this paper is regarded as specific. It is based on the high acid-phosphatase content of the normal prostatic tissue and of the ejaculate of the male, levels of 500 to 2,500 King–Armstrong units per gramme of epithelial gland tissue being reached. A quantity of 1 ml. of an extract of stained material may contain approximately 500 to 3,500 King–Armstrong units, but levels as low as 25 King–Armstrong units in 1 ml. of extract from 1 sq. cm. of stained material are regarded as positive proof. Other human secretions and excretions and extracts from various foods contain fewer than 5 King–Armstrong units per ml.

The author describes his method in detail, expressing the acid-phosphatase content of the material examined in Bodansky units. The lowest level which is regarded as indicating a positive result is one of 150 units; levels as high as 822 and 2,100 Bodansky units from a year-old and a 5-day-old stain respectively are regarded as strongly positive. The method is also applicable in cases of azoospermia. The accuracy of the result depends largely upon the experience of the investigator and the care with which he carries out the test, the cleanliness of the apparatus, and the type of material examined, especially its absorptive capacity. In cases of doubt a control test is recommended with material which is genuinely stained with semen. *M. Dynski-Klein*

65. **Septic Spontaneous and Suspected Criminal Abortion.** (Septischer Spontanabort und fragliche Abtreibung)
H. SAAR. *Deutsche Zeitschrift für die gesamte gerichtliche Medizin* [*Dtsch. Z. ges. gerichtl. Med.*] **40**, 599–605, 1951.

In several cases in which criminal abortion was suspected, necropsy, with bacteriological and microscopical examinations, failed to confirm the diagnosis. There were, however, other possible sources of infection in septic foci of types which have been known to be the origin of fatal septicaemia or peritonitis. The author draws attention to the following points of importance in performing necropsy in cases of suspected criminal abortion. Even if the changes in the uterus seem to be typical a most careful search must be made for another and older primary focus, such as the middle ear, sinus, pharynx, and, above all, the tonsils. Seemingly harmless skin wounds, which may have healed a long time before the necropsy, have been known to cause a severe sepsis. Thrombophlebitis and haemorrhoids are other possible aetiological factors. Peritonitis may originate not only in the appendix and gall-bladder, but in some other infection of the intestines, or it may be pneumococcal. The urinary tract, the endocardium, and, of course, the uterine appendages must not be overlooked. *W. Mestitz*

66. **Histochemical Observations after the Injection of Soap Solution into the Pregnant Uterus.** (Histochemische Beobachtungen nach Seifenwassereinspritzung in die schwangere Gebärmutter)
E. WEINIG and W. SCHWERD. *Deutsche Zeitschrift für die gesamte gerichtliche Medizin* [*Dtsch. Z. ges. gerichtl. Med.*] **40**, 649–663, 1951. 25 refs.

The occurrence of sudanophil deposits in the uterus after injection of soap solutions, which has been confirmed by animal experiments, is remarkable because the fat content of soap is, as a rule, small. The authors have studied 9 fatal cases of criminal abortion after such injections. In cases of acute air embolism fat was present mostly in the form of droplets, chiefly in the vessels. If a few days had elapsed between the injection and the examination these substances were found in vessels and lymph spaces; if several weeks had elapsed they were present not only in lymph spaces but also in muscle cells. The authors point out that if involution of the uterus has already started, and in septic conditions, these findings must be interpreted with caution because of the possibility of fatty degeneration. In the absence of this, the presence of sudanophil deposits in the lungs, liver, and kidney may be taken as indicating embolism with soap particles. Specific staining to elucidate chemical changes has not been conclusive. *W. Mestitz*

67. **A Spectrophotometric Method for the Detection of Blood Stains**
A. A. KHALIFA and M. K. SALAH. *Nature* [*Nature, Lond.*] **169**, 461–462, March 15, 1952. 1 fig., 4 refs.

68. **Attempted Suicide with a Mixture of " Antabuse " and Alcohol.** (Pokus sebevraždy kombinaci antabus–alkohol)
E. VENCOVSKÝ and A. REISICH. *Časopis Lékařů Českých* [*Čas. Lék. čes.*] **90**, 1465–1467, Dec. 7, 1951.

Methods of committing suicide are changing: the once popular method of poisoning with phosphorus has given way to poisoning with narcotics. The author reports the first attempted suicide with " antabuse " and alcohol, by a chronic alcoholic during anti-alcoholic treatment under the State-sponsored antabuse scheme in Czechoslovakia. The amount of alcohol leading to fatal intoxication varies with its concentration in the

blood, the tolerance of the individual, and the presence of intercurrent or latent diseases. A blood level of approximately 0·6 mg. per 100 ml. is generally accepted as fatal.

Antabuse (tetraethylthiuram disulphide) is a non-toxic substance widely used in the chemical treatment of alcoholism. Its effect is based on its prevention of the complete oxidation of ingested alcohol. The oxidation is arrested at an intermediate stage, when acetylaldehyde is produced; this leads to a temporary intoxication of which the very unpleasant symptoms deter the individual from taking more alcohol. As the anti-alcoholic action develops only after some days, treatment has to be administered 2 to 3 days weekly. Lethal accidents have been seen only in a few cases where contraindications have been disregarded. The intensity of the action depends upon the amount of alcohol consumed at one time. The constant threat of the effects of taking alcohol—that is, complete mental and physical incapacity—is the strongest inducement to abstinence.

A patient who was living under great emotional stress and was undergoing antabuse treatment took within a short time 1 pint (568 ml.) of brandy, thus causing severe intoxication. Attention is drawn to the possibility of suicidal attempts during mass antabuse treatment.

M. Dynski-Klein

69. **Acute Yellow Atrophy of the Liver following Treatment with Phenylacetyl-urea**
L. A. LIVERSEDGE, P. O. YATES, and H. LEMPERT. *Lancet* [*Lancet*] **1**, 242–243, Feb. 2, 1952. 1 fig., 7 refs.

70. **Safe Human Tolerance for High Concentration of CO Over Short Periods of Time**
A. L. HALL, C. A. PATTERSON, and J. K. COLEHOUR. *Journal of Aviation Medicine* [*J. Aviat. Med.*] **22**, 501–508 and 517, Dec., 1951. 4 figs., 9 refs.

The factors which determine the uptake of carbon monoxide (CO) by the blood are the partial pressures of CO and oxygen (O_2) before and during exposure, barometric pressure, lung blood flow, pulmonary ventilation, the mass of haemoglobin (Hb) exposed, blood volume, and the dissociation constants of CO, O_2, and Hb. Changes in carboxyhaemoglobin (COHb) concentration may be calculated from Pace's equation as:

$$\frac{\text{Parts CO} \times \text{Minute volume} \times \text{Time}}{\text{Blood volume} \times 42{\cdot}5}$$

At a simulated altitude of 10,000 feet (3,050 m.) 5 subjects breathed various known concentrations of CO in air for periods of 5 and 3 minutes, and of 60, 40, 20, and 10 seconds. Venous blood was analysed for COHb content by the Van Slyke method before and after exposure. From the results a concentration of CO was calculated which would produce a change of COHb of 7% or greater. Each experiment was repeated using this theoretical gas mixture, and a further specimen of blood was then analysed. By extrapolation the concentration of CO needed to change the COHb by exactly 7% was found. The values obtained showed good correlation with those predicted from the formula given above and it is concluded that this equation is valid for short-term exposures to CO.

One subject inhaled 500 ml. of 100% CO in 2·5 seconds at sea level, with a resultant change of COHb of 13·7% and an absolute absorption of 194 ml. Transient dizziness was the only symptom. At 10,000 feet (3,050 m.) the same subject breathed 500 ml. of 50% CO, with a gas uptake equivalent to 126 ml. at sea level. No symptoms were noted.

P. Howard

71. **Deaths from Poisoning, Massachusetts, 1938–1948**
M. MOORE, L. ALEXANDER, and J. IPSEN. *New England Journal of Medicine* [*New Engl. J. Med.*] **246**, 46–52, Jan. 10, 1952. 3 figs., 7 refs.

This paper records an analysis of the case reports of the medical examiner in the State of Massachusetts for the period 1938–48. By law, all cases of poisoning must be brought to the notice of the medical examiner. The authors believe that when alcoholism is the cause, or one of the causes, of death the attending physician sometimes omits it from the death certificate altogether (or gives it a subsidiary place) in order to spare the relatives' feelings.

During the period reviewed the medical examiner investigated 119,838 deaths, or 20% of the total deaths in the State. Of this number, 7,968, or 6·6%, were due to poison, and half of these to alcohol. Carbon monoxide accounted for more than half of the remainder, and barbiturates for 377 out of 455 fatal poisonings attributed to sedatives. Over half of the deaths due to poison were suicidal, and 17% of the people who committed suicide in Massachusetts during the decade used poison. Of a total of 664 homicides, only 22 were effected by poisoning.

By comparison with the preceding decade there was a general decrease in deaths due to poisoning, the decrease being 10 to 50% for all agents other than barbiturates. In contrast, there were over 11 times more suicides due to barbiturates in the second decade than in the first, and the authors subscribe to the view that control of distribution of these drugs is not strict enough.

Gilbert Forbes

72. **Ferrous Sulfate Poisoning. Report of Three Cases**
T. L. DUFFY and A. M. DIEHL. *Journal of Pediatrics* [*J. Pediat.*] **40**, 1–5, Jan., 1952. 2 figs., 7 refs.

73. **Ferrous Sulfate Poisoning. Report of a Fatal Case**
S. C. SWIFT, V. CEFALU, and E. B. RUBELL. *Journal of Pediatrics* [*J. Pediat.*] **40**, 6–10, Jan., 1952. 3 figs., 5 refs.

74. **Some Observations on the Pharmacological Actions of Dart Poison of Malaysia**
R. CHUN YU LIN. *Proceedings of the Alumni Association of the King Edward VII College of Medicine, Singapore* [*Proc. Alumni Ass. Edw. VII Coll. Med.*] **4**, 281–290, Dec., 1951. 6 figs., 12 refs.

Radiology

75. **The Uptake of Radioactive Phosphorus in Normal Brain and Brain Tumours**

J. E. STAPLETON, W. MCKISSOCK, and H. E. A. FARRAN. *British Journal of Radiology* [*Brit. J. Radiol.*] **25**, 69–75, Feb., 1952. 6 figs., 4 refs.

In investigations carried out at the Royal Cancer and Atkinson Morley Hospitals, London, 34 patients with space-occupying brain lesions were given radioactive phosphorus (^{32}P) a day before operation, and an attempt was made to compare the uptake of ^{32}P in biopsy specimens of healthy and malignant brain tissue. The activity was measured in a liquid counter after digestion of the specimen in concentrated potassium hydroxide. In 14 specimens of healthy brain tissue the specific activity was less than half the normal body activity, the only exception being in cerebellar tissue from a child.

In 13 cases assessment of the uptake of ^{32}P by both healthy and malignant brain tissue was possible. In 12 of these there was greater concentration in tumour tissue, ranging from 2 to 34 times that in healthy tissue. The concentration in a finely cystic astrocytoma with tumour cells widely scattered was 0·9 of normal. Healthy brain tissue was found to give a consistent level of uptake, whereas there were wide variations in different parts of a tumour. In general, uptake was greater in the more cellular and undifferentiated tumours.

It is suggested that a needle counter would be a useful tool in the investigation of brain tumours. The technical difficulties of its use are briefly discussed.

D. G. Bratherton

76. **The Metabolism of Radioactive Iodine (I^{131}) in Patients with Cardiac Disease**

F. R. BIRKHILL, K. E. CORRIGAN, and H. S. HAYDEN. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 42–50, Jan., 1952. 6 figs., 21 refs.

In a study of the effect of severe cardiovascular disease on the metabolism of radioactive iodine, subjects were divided into two groups: the first included 20 patients with signs and symptoms of cardiac decompensation (14 of these had gross peripheral oedema at the time of study); the second (control) group contained 44 subjects, including 21 healthy persons, 12 thyrotoxic patients, and 11 with marked hypothyroidism. All the patients were given a 40-mc. carrier-free dose of ^{131}I before breakfast on the first day of the study, and serial counts were made subsequently over different parts of the body. In general, in patients with no cardiovascular disease there was complete clearance of ^{131}I from peripheral tissues within 26 to 34 hours, whereas in patients with cardiovascular disease there were in the same period significant degrees of retention of ^{131}I in the soft tissues. This was not without effect upon the total thyroid uptake of ^{131}I, which was found to be deficient, and the authors point out that estimation of total thyroid content of ^{131}I by total urinary excretion under such conditions would have been seriously in error. Moreover, the presence of latent thyrotoxicosis in a patient with cardiac disease might be masked by these changes in the metabolism of ^{131}I.

A number of graphs illustrate how cardiovascular incompetence altered the metabolism of ^{131}I, chiefly through disturbance in the extracellular fluid and electrolyte components of the body, together with resulting renal insufficiency. In fact, occult oedema was demonstrated for the first time in a number of cardiac patients by characteristic ^{131}I tracer changes and this was confirmed subsequently by the development of clinically demonstrable decompensation. No such changes were seen in the patients in the control group.

Jan G. de Winter

RADIOTHERAPY

77. **Radiological Use of High Energy Deuterons and Alpha Particles**

C. A. TOBIAS, H. O. ANGER, and J. H. LAWRENCE. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 1–27, Jan., 1952. 18 figs., 48 refs.

In this paper the authors discuss some of the physical properties, biological uses, and potential medical applications of deuterons, alpha particles, and protons from the Berkeley 184-inch (468-cm.) frequency-modulated cyclotron. It is shown that the 190-MeV deuteron beam possesses an advantage compared with 200-kV *x* rays and 16-MeV electrons in producing high ionization at considerable depth. An additional advantage is the low skin dose and scattering, as well as a very rapid fall off in ionization both in the forward and in the lateral directions.

The lethal effect of whole-body irradiation on white mice was found to be approximately the same for 200-kV *x* rays, 190-MeV deuterons, and 340-MeV protons. Preliminary studies of radiation effects on transplantable mammary carcinoma in Strong-A strain mice were also undertaken. The tumour lethal dose was first established. This was done by pulling the entire tumour, enclosed in a skin fold, away from the body so that only the tumour and skin fold were traversed by the radiation beam. Next the mice were placed in such a way that the deuteron beam had to pass through the lungs first before reaching the tumour. A multiple-port technique was also tried by fixing the tumour in space and rotating the animals themselves slowly around the tumour, describing an arc of 120 degrees.

The effect on the irradiated mice was quite uniform. Tumour tissue exposed to the most ionizing portions of

the beam showed rapid regression, but in some animals there was evidence of continuing tumour growth, probably due to faulty alignment of the beam. The irradiated animals lost weight, but regained it within a few days after irradiation. Post-mortem studies on mice which died showed in some cases haemorrhage into the lungs; others showed pulmonary fibrosis. Some animals died as late as 9 months after irradiation from late radiation effects, without any previous warning of lethal effect. It is pointed out, however, that owing to the small size of the test animal's body a relatively large dose to some of the vital organs of the animals could not be avoided.

These experiments are stated to indicate that in the case of larger animals or human beings it should be quite easy, in view of the advantageous depth-dose characteristics of ion beams, and provided the tumour contours are accurately known, to administer a large dose to a relatively small tumour mass with very little absorption of radiation in the surrounding normal tissues.

This article contains a wealth of information of interest to the physicist, such as detailed accounts of measurements of ionization, range, stopping power, and dosimetry of the ion beam. It also shows that the deuteron beam, because of its deep and straight penetration in tissues, with small scattering and maximum dose near the end of its range, may become a valuable and most powerful clinical tool, which the radiotherapist would be wise to use with great caution and in very close collaboration with the physicist. *Jan G. de Winter*

78. **1,000-Curie Cobalt-60 Units for Radiation Therapy**
H. E. JOHNS, L. M. BATES, E. R. EPP, D. V. CORMACK, S. O. FEDORUK, A. MORRISON, W. R. DIXON, and C. GARRETT. *Nature* [*Nature, Lond.*] **168**, 1035–1036, Dec. 15, 1951. 3 refs.

79. **Thymic Tumour Associated with Myasthenia Gravis, with Special Reference to the Effects of *X*-ray Therapy**
I. G. WILLIAMS. *Journal of the Faculty of Radiologists* [*J. Fac. Radiol.*] **3**, 176–185, Jan., 1952. 6 figs., 17 refs.

The presence of a thymic tumour has been shown to militate against the success of thymectomy for myasthenia gravis. In patients with a tumour there is a tendency for the history to be short and for the patient to give only a partial response to neostigmine; operation is more difficult, and despite a satisfactory immediate response, irreversible myasthenia may supervene after a short interval. For these reasons pre-operative radiotherapy is preferable, and in this paper the author describes the management and *x*-ray therapy of a series of 13 patients treated in 3 years at St. Bartholomew's Hospital, London.

After a review of the part played by the thymus gland in myasthenia and the pathology of thymic tumours, the author discusses the technique of *x*-ray therapy. He stresses the advantages of supervoltage (1-MeV) over deep (250-kV) *x* rays in these cases. In addition to the higher depth dose, the volume dose required is smaller and less normal tissue is irradiated—important factors in minimizing leucopenia and maintaining the patient's general condition, the latter being essential in view of the possible complications of radiotherapy. *X*-ray therapy is planned so as to deliver a tumour dose of 4,000 r in 4 weeks, but a small initial dose (50 to 100 r) is given to avoid increasing the myasthenia. It is recommended that the dosage of neostigmine should be constantly reviewed during radiotherapy. Complications encountered were atypical pulmonary infections and mediastinitis. It is pointed out that while the tumour may regress rapidly and be no longer visible radiologically after 1,000 to 1,500 r, the improvement in myasthenia is slower, but may continue for some weeks after the end of therapy.

The results are described in 13 cases—4 treated by irradiation alone and 9 by irradiation in conjunction with surgery. Of the 4 patients treated by irradiation, one was able to dispense with neostigmine and led a normal life for 2½ years; in another (a 2-year case) a retropericardial recurrence developed after one year, but this responded to further irradiation and the patient's myasthenia was afterwards controlled by small doses of neostigmine; a further case with seedling intrathoracic metastases responded to irradiation, but still required 75 mg. of neostigmine a day; the last was a recent case. Of the 9 patients subjected to thymectomy one died of metastases and 4 have only recently been treated; of the remainder, one was well and required only an occasional tablet of neostigmine after 3 years, and the response was satisfactory in the other 3. *Arthur Jones*

80. **Changes in the Morbid Histology of Epithelioma of the Breast following Radiotherapy.** (Les remaniements roentgenthérapiques des épithéliomas mammaires de la femme. Étude histo-pathologique)
R. HUGUENIN and R. GERARD-MARCHANT. *Semaine des Hôpitaux de Paris* [*Sem. Hôp. Paris*] **27**, 3817–3824, Dec. 26, 1951. 6 figs., 3 refs.

The histology is described in 40 cases of breast carcinoma in which radical surgery was undertaken 4 to 6 weeks after completing a course of irradiation. The radiotherapeutic technique involved the use of internal and external mammary fields together with axillary and supraclavicular fields to a dose of 3,000 r to each field in about 3 weeks (technical factors: 200 kV, 1 mm. Cu, 2 mm. Al, F.S.D. 50 cm.). There were 7 cases where the diagnosis of carcinoma had been established clinically, but where no signs of malignancy were found histologically after irradiation. The specimens had, however, an unusual appearance in that the glandular elements showed acinar hyperplasia with interstitial fibrosis. The authors discuss the question whether these " doubtful cases " represented cured carcinoma or were initially benign. [It is a pity that serial biopsy was not carried out in these cases.] Although the histological appearance of primary growth and secondary lymph-node metastasis after irradiation is widely discussed, a statistical analysis is not attempted owing to the small number of cases involved. It is noted that certain forms of hormone therapy may induce regressive changes similar to those caused by irradiation. *Basil A. Stoll*

81. **A Lipoprotein-Nucleic Acid Complex in the Treatment of Radiation Injury (a Preliminary Report)**
R. M. THOMPSON. *Military Surgeon* [*Milit. Surg.*] **110**, 51–59, Jan., 1952. 11 figs., 12 refs.

82. **Small-volume Irradiation in Gynaecology.** (Die gynäkologische Kleinraumbestrahlung)
R. K. KEPP. *Zeitschrift für Geburtshilfe und Gynäkologie* [*Z. Geburtsh. Gynäk.*] **135**, 121–149, 1951. 17 figs., bibliography.

The term *Kleinraumbestrahlung* was coined by Martius to define a method of *x*-ray therapy devised by him for the treatment of cancer in the female pelvis. This method follows the well-known radiotherapeutic principle of confining the radiation beam to the volume of tissue containing the tumour and endeavouring to avoid irradiation of adjacent normal structures. This is achieved in practice by means of a specially constructed intracavitary *x*-ray tube, which is introduced into the vagina. A special feature of this *x*-ray tube, which is run at 60 or 100 kV, is the location of its target, which is situated at the end of a hollow tubular anode. The focus of the tube, therefore, lies in the depth of the vagina during treatment, and this produces the desired increase in the angle of divergence of the *x*-ray beam which makes it possible to administer an adequate dose to the side wall of the pelvis. By the use of angulated applicators into which filter caps of desired shape and thickness can be inserted it is possible both to aim the beam in any direction within the pelvis and accurately to control its cross-section, thus avoiding irradiation of adjacent vital healthy structures.

The present paper contains a comprehensive review of cases treated in the Women's Clinic of the University of Gottingen over the past 20 years. The author endeavours [not without some success] to convince the reader of the superiority of the transvaginal method of *x*-ray therapy over external irradiation for a multiplicity of malignant gynaecological conditions, including parametrial invasion by growth in cases of cervical and uterine cancer, deep paravaginal infiltration in patients with primary vaginal carcinoma, and deposits in the pouch of Douglas following primary ovarian tumours, as well as recurrences situated on the side wall of the pelvis. One advantage claimed for this method of treatment is the complete absence of untoward constitutional effects, which makes it the treatment of choice in debilitated patients; it can even be used with impunity in the presence of high fever due to secondary infection of the tumour.

Treatment by this method depends for success on the great tolerance of the vaginal mucosa to radiation. It is claimed that the vaginal wall is infinitely more resistant to radionecrosis than the external skin, and a total radiation dose, administered through a small field, up to 30,000 r at 60 kV is said to be tolerated by the vagina without evidence of permanent damage. Such a dose produces a transient intense erythema in most cases, and occasionally a superficial necrosis may supervene, but this will heal up, as a rule, within a few weeks. The incidence of radiation-induced fistulae, which for the early part of the period (1935–9) was 9·8%, has actually been reduced to 1% for the period 1940–2. This unfortunate complication is stated to be confined nowadays to cases with involvement of the recto-vaginal or vesico-vaginal septa, or to develop in patients who are re-treated for a recurrence after a previous course of radiotherapy.

Primary carcinoma of the cervix is treated by a combination of radium therapy to the primary with transvaginal and external irradiation, which are employed to supplement the dose to the parametria and side wall of the pelvis, proper allowance being made for overlap and summation of dose at the limits of the various radiations.

When the transvaginal method is employed alone, a total tumour dose of 2,400 r at the side wall of the pelvis, administered in 12 equal doses of 200 r each, is considered to be the maximum permissible dose in cases with an intact and previously unirradiated vaginal mucosa; the corresponding dose at the vaginal wall in these cases reaches a level of 30,000 r. This dose is naturally modified in patients where a combination of irradiation methods is used.

The results of treatment for the period 1926–44 are set out in a table. The cure rates are subdivided into four groups according to chronological order of treatment. The last period quoted concerns patients treated in 1943 and 1944 and shows an absolute cure rate of 42·9%. This figure is not due to any marked success in Stage I cases, which have relative cure rates of 48·6% for patients treated by a combination of surgery and radiotherapy and 62·8% for those treated by irradiation alone. Stage III cases, on the other hand, show a relative cure rate of 36·5%. [This is a remarkable achievement.] The cure rate for recurrent cases was 28·5% for patients originally treated by surgery and 17·2% for those previously irradiated [again a most creditable result].

[It would seem that the transvaginal method of *x*-ray treatment is of greatest value in the more advanced type of case with parametrial involvement, or in recurrent cases. The results claimed for the early group of cases are significantly worse than one is accustomed to expect for a corresponding group of cases treated by more conventional methods of radiotherapy, and most radiotherapists would hesitate to administer 30,000 r to the vaginal wall in relatively early cases. The omission of a more detailed statement concerning the total number of patients treated and their distribution in relation to stage of disease, as well as the incomplete presentation of technical details relating to field size, tumour dose, and fractionation, precludes a more critical evaluation of this method. Few radiotherapists, however, would consider a dose of 2,400 r adequate to deal effectively with sacral or iliac lymph-node metastases, and still fewer would agree with the statement that such metastases, if originating in a relatively radiosensitive type of carcinoma, may become even more radiosensitive after invading a lymph node.] *Jan G. de Winter*

83. **Radium Beam Dose–Time Relations**
W. BOND. *Journal of the Faculty of Radiologists* [*J. Fac. Radiol.*] **3**, 111–124, Oct., 1951. 13 figs., 15 refs.

RADIODIAGNOSIS

84. **A Practical Method of Vertebral Angiography**
N. O. AMELI. *British Journal of Surgery* [*Brit. J. Surg.*] **39**, 327–330, Jan., 1952. 10 figs., 3 refs.

The technique of vertebral angiography described consists in the exposure of the right common carotid artery between the heads of the sternomastoid and its temporary occlusion by means of traction on a rubber band during the proximal injection of 20 ml. of 50% diodone—the right subclavian artery being occluded at the same time by compression against the first rib. The injection is made rapidly, and films are exposed at the end of the injection and also 3 to 4 seconds later. The advantages claimed for the technique are its simplicity, the good results obtainable, and the fact that vertebral and carotid angiography may be performed at the same session. The anatomy of the basilar artery and its branches, as revealed by vertebral angiography, is described, and angiograms demonstrating the practical value of the method are reproduced.

[The method—a modification of that of Elvidge—would appear to be more satisfactory than techniques which involve the percutaneous injection of dye into the artery as it passes through the vertebral arterial canal or in the suboccipital triangle.] *J. E. A. O'Connell*

85. **The Esophagus and Mediastinal Lymphadenopathy in Bronchial Carcinoma**
F. G. FLEISCHNER. *Radiology* [*Radiology*] **58**, 48–56, Jan., 1952. 8 figs., 8 refs.

The author briefly refers to the anatomy of the mediastinal lymph nodes. He stresses the value of observing the barium-filled oesophagus in the detection of enlarged lymph nodes, especially when those at the bifurcation are affected, as they lie in close relation to the oesophagus, displacing it to the left and posteriorly; this displacement is most obvious in the left anterior oblique position. In contrast the displacement due to enlargement of the left auricle is usually to the right, affecting a greater length and best seen in the right anterior oblique position. In order to distinguish hilar nodes from vascular shadows, oblique views, screening, and tomography are recommended.

Although enlarged mediastinal lymph nodes may be due to inflammatory conditions, neoplastic involvement is the more usual cause, and of the neoplastic conditions bronchial carcinoma is the commonest. The presence of enlarged nodes in bronchial carcinoma usually indicates inoperability.

Three cases are reported and illustrated in which there were enlarged nodes at the bifurcation; in a fourth case, also illustrated, there was neoplastic infiltration of the mediastinum mainly posterior to the oesophagus.

Sydney P. Hinds

86. **A Technique for Paediatric Bronchography**
H. M. WOOD and R. ASTLEY. *British Journal of Radiology* [*Brit. J. Radiol.*] **25**, 22–24, Jan., 1952. 7 refs.

87. **Further Observations on the Diagnostic Value of Pulmonary Angiography in Bronchiogenic Carcinoma**
D. J. SCHISSEL and P. G. KEIL. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 51–56, Jan., 1952. 7 figs., 7 refs.

The authors describe their experience at the Veterans Administration Hospital, Des Moines, Iowa, in 40 cases in which angiopneumography was carried out for the diagnosis of carcinoma of the bronchus, and in particular 10 cases where all other diagnostic procedures were negative. They use 50 ml. of 70% diodone injected rapidly into the right median basilic vein. Where it is feared that the diodone in the subclavian vein may mask the pulmonary vascular pattern the opposite side is used. Postero-anterior radiographs are taken 2, 4, 6, and 8 seconds after the injection is completed.

In 37 cases angiopneumography revealed deviation from the normal pulmonary vascular pattern, consisting in diminished vascularity within and distal to the neoplasm. Of the 3 patients in whom there was no deviation from normal pattern 2 had extensive carcinoma involving the main-stem bronchi and the carina, but little pulmonary parenchymal involvement; the other patient had a small lesion in the posterior juxtapleural region. Of the 10 patients in whom all other diagnostic procedures proved negative, 7 had peripheral lesions and 3 had hilar lesions apparently arising from a small bronchus. In addition to the diminished vascularity, distortion or narrowing of the pulmonary trunk or its major branches was observed in 3 and complete obstruction of a major branch in one. In 2 cases which showed diminished vascularity no evidence of malignancy was found in the resected specimen. One patient had a right upper-lobe atelectasis due to the impaction of a broncholith, and the other a left lower-lobe atelectasis due to a submucosal osteochondroma.

Of the causes of diminished vascularity within the lung fields other than carcinoma, emphysematous blebs were the most common in the present series. It is pointed out that a large inflammatory abscess will not show vessels within its cavity, but there is usually an increase in the vascularity of the surrounding zone. With a breaking-down carcinoma, diminished vascularity distally was found in all cases. Distortion or obstruction of the superior vena cava was observed less frequently than pulmonary vascular changes.

John H. L. Conway-Hughes

88. **Pulmonary Changes in Cases of Disseminated Lupus Erythematosus.** [In English]
I. THORELL. *Acta Radiologica* [*Acta radiol., Stockh.*] **37**, 8–16, Jan., 1952. 10 figs., 13 refs.

In this paper are described 15 cases of disseminated lupus erythematosus treated at the Military Hospital, Boden, Sweden. In 4 cases no *x*-ray changes were found in the lungs; in 3 others there were *x*-ray changes which were considered to be residual of old tuberculous lesions. In the remaining 8 cases pleural or parenchymal changes, or combinations of these, were observed and the author claims that they were caused by the lupus erythematosus.

Pleural effusion was observed in only 2 cases; one patient had small bilateral effusions, and the other pleurisy on the right side with parenchymal changes suggestive of tuberculosis, but as no signs of active pulmonary tuberculosis could be found clinically the pleurisy was presumed to be associated with lupus erythematosus.

In one case no changes were found during repeated *x*-ray examinations in the active phase of the disease, but at a follow-up examination several years later a mottled and streaky consolidation was noted in the peripheral part of the right third interspace, which remained unchanged during a 4-month period of observation. The remaining 5 cases all showed pleural changes —either relatively small effusions or irregular pleural thickenings. In addition they showed peripheral parenchymatous changes consisting of linear streaky opacities. [It would seem that there may be resolution of the shadows in the lung, but the cases are not reported in sufficient detail to give any indication as to how rapid this may be.] *L. G. Blair*

89. **The Roentgenological Picture in Chronic, Non-specific Fibrosis of the Middle Lobe, with Special Regard to the Value of Planigraphy.** [In English]
H. ØDEGAARD. *Acta Radiologica* [*Acta radiol., Stockh.*] **37**, 17–27, Jan., 1952. 9 figs., 7 refs.

In this paper are summarized the findings in 20 patients with chronic middle-lobe fibrosis of non-specific nature examined by lateral tomography at the Rikshospitalet, Oslo. In 6 cases constriction of the middle-lobe bronchus was demonstrated; in 7 cases a calcified lymph node was seen close to the middle-lobe bronchus; in 11 cases evidence of bronchiectasis was discovered; and in one case an abscess of the middle lobe was revealed.

Only 5 cases are reported in detail, but the author claims that the method described helps to determine the extent of the fibrosis or atelectasis and to reveal bronchiectasis, and that in most cases it is possible to obtain a satisfactory picture of the course and calibre of the middle-lobe bronchus. It may also be possible by lateral tomography in cases of bronchial carcinoma to demonstrate the tumour in addition to bronchial stenosis.
L. G. Blair

90. **Lung Cancer. Angiocardiographic Findings in One Hundred Consecutive Proved Cases**
I. STEINBERG and C. T. DOTTER. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 10–19, Jan., 1952. 6 figs., 7 refs.

The authors have studied the pulmonary angiographic appearances in 100 patients with histologically proved carcinoma of the lung. In the majority there was some evidence of vascular abnormality, such as obstruction of, or pressure on, the superior vena cava, obstruction or displacement of a major pulmonary artery, and displacement of segmental pulmonary arteries. In a few of these cases changes were seen which seemed to indicate the actual presence of growth within the vessel.

The authors suggest that the application of angiocardiography is probably most satisfactory in differentiating the causes of obstruction of the superior vena cava when the question of neoplasm arises, and that its use in certain types of carcinoma of the lung will become commonplace. They are in no doubt as to the value of the method in the differential diagnosis of mediastinal masses. [It is probable, however, that cases will have to be carefully selected, as the mounting cost of investigation and treatment throws a responsibility on the doctor to use these costly and involved procedures with the utmost discretion.] *R. A. Kemp Harper*

91. **Angiopneumocardiostratigraphy.** (L'angiopneumocardiostratigrafia)
L. CONSTANTINI. *Rivista di Patologia e Clinica della Tubercolosi* [*Riv. Pat. Clin. Tuberc.*] **25**, 3–16, Jan.–Feb., 1952. 11 figs., 17 refs.

92. **The Detection of Gastric Carcinoma by Photofluorographic Methods—Part III. Findings***
J. F. ROACH, R. D. SLOAN, and R. H. MORGAN. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 68–75, Jan., 1952. 2 refs.

It has been estimated that each year in the U.S.A. approximately 40,000 individuals above the age of 40 develop malignant disease of the stomach. The average duration of life following recognition of its presence is 20 months. In the vast majority of cases surgical cure is impossible by the time the patient seeks medical advice. The authors therefore instituted a mass photofluorographic survey of all out-patients over the age of 40 attending the Johns Hopkins Hospital, Baltimore. They used standard equipment with a Schmidt–Helm camera. Altogether 10,000 examinations were carried out. The patients did not undress or fast. They were first given 2 oz. (57 ml.) of a mixture of barium sulphate, water, chocolate, and malt, and an antero-posterior and two right anterior oblique exposures were made. The patient then drank a further 4 oz. (114 ml.) of the barium mixture and a postero-anterior and two right anterior oblique exposures made. All exposures were made with the patient supine. The examination took 4 to 5 minutes and was carried out by a technician. If any abnormality was seen on the miniature film the patient was asked to return for a conventional gastro-intestinal examination.

In 90·7% of the examinations it was considered that the stomach was visualized sufficiently for diagnostic interpretation. The majority of the unsatisfactory results were due to the presence of an excess of food, the remainder to technical defects. In 90·6% of the successful examinations the stomach was regarded as normal. In 47·8% of the examinations the duodenal bulb was inadequately filled, in 50% it was normal, and in 2·2% abnormal. Of the patients in whom the miniature study was successful, 13·3% underwent further examination. In 60·6% of these cases the stomach was regarded as normal by both methods, in 10·4% as abnormal by both methods, in 25·4% as abnormal on the miniature film only, and in 1·4% on

* An abstract of Parts I and II of this study will be found in *Abstracts of World Medicine*, 1949, **6**, 414.—ED.

standard examination only. In the remaining 2·2% the second examination was unsatisfactory.

There was proved gastric malignancy in 27 cases at operation, in 23 of which the neoplasm was found to extend outside the stomach. Of patients in whom malignancy was suspected but whose symptoms were minimal, it proved impossible to convince the majority that they had lesions serious enough to warrant their entering hospital to undergo an exploratory laparotomy.

The authors conclude that a mass photofluorographic survey is accurate enough for diagnostic purposes when compared with the standard gastro-intestinal investigation. The incidence of early cases of gastric carcinoma detected was 0·2%, and it is suggested that the general public require further education on the gastric cancer problem before they can be persuaded to undergo exploratory operation and thus make photofluorography worth while. Efforts are being made to reduce the large percentage of cases in which the duodenal bulb is inadequately filled. The authors are of the opinion that the method will be of use in large institutions and will reduce the number of standard examinations necessary.

John H. L. Conway-Hughes

93. **A Roentgenographic Study of Synovioma**

R. S. SHERMAN and F. C. H. CHU. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 80–89, Jan., 1952. 10 figs., 16 refs.

The authors report on 32 cases of proved synovioma. The patients' ages ranged from 10 to 70 years, nearly 80% being between 15 and 44. In 11 cases the synovioma was situated around the knee and in the remainder in association with other joints of the limbs, including the foot. Symptoms were pain, swelling, and disability, and the signs were tenderness and limited mobility with a palpable mass. The primary lesion was solitary in all cases. Various forms of treatment were carried out, including local excision, amputation, and *x*-ray therapy, both alone and pre- and post-operatively. Local recurrence and metastasis to the lungs were common in the later stages, but only 2 cases showed metastasis in other bones. The majority of the tumours were spherical, the others oval. Their diameter varied from 2 to 16 cm., and recurrences were about the same size.

One of the most constant features was the close association with a joint. It was not always possible to say whether the tumour was entirely within or partially outside the capsule. An associated effusion into the joint occurred only infrequently. There was no evidence of synovial thickening or of cartilage destruction. Osteoporosis, which was not uncommon, was thought to be mainly due to disuse. Periosteal reaction was seen only once, in association with bone destruction. The soft-tissue tumour itself was structureless and homogeneous. In 3 tumours small areas of calcificatiion were seen; 2 of these had been irradiated.

The ease of identification of the tumour depended to some extent upon the contrast between it and surrounding structures, and good technique is regarded as essential. When the edge was seen it was regular and smooth. There was no evidence of a capsule. Bone destruction was uncommon, and when present had a finely ragged, somewhat ill-defined edge without sclerosis. None of the tumours resembled a bone tumour. The differentiation from other forms of soft-tissue tumour is discussed. Liposarcomata are quite dissimilar, being situated far from a joint and having plentiful calcification in a heterogeneous background. Fibrosarcomata are located away from a joint, but are otherwise similar apart from a greater tendency to calcification; myosarcomata are also situated away from a joint, but are otherwise similar. The same applies to myxosarcomata of tendon-sheath origin and plexiform neuromata. In 2 cases of tendon fibroma studied abundant calcification was observed; and in 4 cases of giant-celled tumour of tendon the growth closely resembled a synovioma, but in all cases except one was situated on a digit. Other conditions to be considered in the differential diagnosis are synovial cyst and villo-nodular synovitis.

John H. L. Conway-Hughes

94. **Preliminary Observations on the Radiological Examination of the Female Genital Tract by Means of Retropneumoperitoneum.** (Prime osservazioni sull'esplorazione radiologica dell'apparato genitale femminile mediante il retropneumoperitoneo)

L. ROSSI. *Radiologia Medica* [*Radiol. med., Torino*] **37**, 705–716, Sept., 1951. 11 figs., 13 refs.

The author describes the application of the technique of retroperitoneal gas injection to the radiological study of the position, form, and dimensions of the uterus and its relation to the other intrapelvic organs and to the bony pelvis. His method, developed at the Radiological Institute of the University of Florence, is stated to be simple, innocuous, and of considerable value, especially in cases where full gynaecological examination is difficult or impossible. His work is based on the observation that if the patient is kept in the Trendelenburg position for some time, gas injected into the retro-rectal space diffuses not only upwards into the retroperitoneal space, but also forwards around the uterus, between the broad ligaments, and also into the perivesical spaces, outlining all the structures in the true pelvis from the bladder in front to the rectum at the back.

The author follows the original technique of Rivas (*Arch. esp. Urol.*, 1948, **4**, 223) for the introduction of the gas, 1,000 to 1,300 ml. of oxygen being insufflated by means of an artificial-pneumothorax apparatus, but oxygen is preferred to air because of its quicker rate of absorption. Immediately afterwards the patient is placed in the Trendelenburg position for 2 to 3 hours, and when it is obvious on screening that the gas has infiltrated into the desired area, films are taken. The author uses the following projections, all taken with the patient in the Trendelenburg position: (1) antero-posterior; (2) postero-anterior; (3) antero-posterior, with the central ray running in a cranio-caudal direction; and (4) postero-anterior, with the central ray running in a caudo-cranial direction. These examinations are followed by tomography in a series of planes from 3 cm. to 10 cm. with the patient in the supine position and the

position of the central ray half-way between the umbilicus and pubis. In the 3- to 4-cm. planes the retro-rectal and perirectal spaces are seen to be outlined by gas. The rectum itself and its walls are seen in the 5-, 6-, and 7-cm. planes, and a little farther forward the ovaries are seen as almond-shaped opacities lying obliquely from above downwards. At 6, 7, and 8 cm. the uterus is clearly outlined by the gas which has penetrated into the broad ligaments, and at 8 to 10 cm. a cup-shaped shadow appears which is caused by gas around the bladder. It is obvious that any alteration in the size, position, or shape of any of the pelvic organs will be seen clearly in the tomograms thus obtained.

Illustrations are given of a normal case, a case of ovarian cyst together with a 2-month pregnancy, and a case of lipoma of the mesosigmoid which on clinical examination could not be separated from the pelvic organs, but which radiography showed to be unrelated to any of them. The author intends to develop this method still further by associating it with other examinations such as hystero-salpingography, pneumocystography, and rectal air insufflation. *J. Rabinowitch*

95. **Urinary Incontinence in Women: Roentgen Manifestations**
A. K. Briney and P. J. Hodes. *Radiology* [*Radiology*] **58**, 109–112, Jan., 1952. 6 figs., 5 refs.

The authors review the literature on urinary incontinence in women, paying special attention to the work of Kegel and Powell (*J. Urol.*, 1950, **63**, 808) and that of Muellner (*Surg. Gynec. Obstet.*, 1949, **88**, 237), on which their own observations are based. They claim, however, that the radiological examination is equally as effective by intravenous pyelography as by retrograde pyelography, provided the patient is able to concentrate the contrast medium adequately. Details of the technique are not given, but the authors emphasize that the urinary bladder should be radiographed in each position so as to maintain a constant relationship with the surrounding bones of the pelvis. Films are taken with the patient: (1) supine, (2) erect and relaxed, (3) erect and straining. In the normal patient slight pointing of the bladder base occurs only on straining; in stress incontinence this pointing is observed with the patient erect even when relaxed, and the degree of descent is also greater. There are diagrams and reproductions of radiographs to illustrate these features. *Sydney J. Hinds*

96. **Roentgenographic Signs of Tumor Infiltration of the Wall of the Urinary Bladder.** [In English]
C. Franksson and K. Lindblom. *Acta Radiologica* [*Acta radiol., Stockh.*] **37**, 1–7, Jan., 1952. 9 figs., 1 ref.

With a view to assessing the extent of invasion of bladder tumours the authors, at the Karolinska Sjukhuset, Stockholm, performed cystography in 117 cases and excretory urography in 229 cases. It was hoped that by cystography it would be possible to demonstrate the thickness of the bladder wall and so obtain information as to the degree of invasion. Of the 117 cases thus investigated the outline of the bladder was visible in 55. This was demonstrated in some cases by contrast of the bladder wall with the subperitoneal layer of fat. In some a pneumoperitoneum was induced, and in yet others the contrast was obtained by means of an intraperitoneal injection of diodone mixed with procaine or by distension of the sigmoid colon with air or barium.

Tumours in the anterior wall were studied directly, aided by the outline between the bladder wall and the prevesical fat, or indirectly by infiltration of the prevesical fat with 35% diodone and 1% procaine. [No figures are given to indicate how often the various contrast media were employed.]

Of the 55 cases in which the outer contour of the bladder was demonstrated, 35 showed thickening suggesting tumour invasion. Out of the 229 cases examined by urography, dilatation of one or both ureters or an absence of excretion was found in 58 cases. The large majority of the cases with dilated ureters showed deeply infiltrating tumours. *L. G. Blair*

97. **The Technique of Translumbar Arteriography**
P. G. Smith, T. W. Rush, and A. T. Evans. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 255–258, Jan. 26, 1952. 4 figs., 7 refs.

The authors have performed 1,000 aortic punctures without serious complication, the procedure being now used as a routine in upper urinary tract investigations at the University of Cincinnati College of Medicine.

The patient is placed in the prone position on the *x*-ray table and after a preliminary film has been studied he is given an intravenous injection of thiopentone. After skin preparation a 15-cm., 18-gauge needle, introduced about 8 cm. from the midline just below the 12th rib, is directed upwards, forwards, and medially to the body of D12. When this is encountered the needle is withdrawn 2·5 cm. and advanced more anteriorly in a series of movements until it just clears the body. The stylet is then withdrawn and the needle inserted a further 0·5 to 1·0 cm. to enter the aorta.

The syringe is connected to the needle by a length of plastic tubing and two adapters. The tubing is bound to the latter by medium silk or No. 32 steel wire. The syringe–tubing assembly is filled with about 12 ml. of 70% " neo-iopax " or diodone and attached to the needle immediately after puncture. Once blood flow into the tubing and pulsation have been observed the injection is started, and completed in 1·5 to 2·5 seconds. No pressure apparatus is necessary. The first film is exposed as the last ml. is injected, and a second film obtained as soon as the cassettes can be changed. An exposure of 0·1 second, necessitating a high-speed Bucky diaphragm, is required.

The authors state that an experienced operator can obtain satisfactory arteriograms in 90% of cases; and if they are unsatisfactory the examination may be repeated next day. Extra-aortic injection, though not harmful, is the commonest cause of failure. The puncture site must not be too low or the needle may enter the coeliac or superior mesenteric artery.

The technique is suitable for renal investigation, for the study of abdominal and pelvic vessels, and for location of the placental site. *Kenneth A. Rowley*

Anaesthesia

98. **Methyl *n*-Propyl Ether for Minor Surgery**
J. W. DUNDEE and J. I. M. LAWSON. *Anaesthesia* [*Anaesthesia*] **7**, 34–37, Jan., 1952. 8 refs.

The authors report on anaesthetics administered to 600 unpremedicated out-patients for minor surgical procedures by resident anaesthetists, house-surgeons, or supervised medical students. In 200 cases the anaesthetic was unsupplemented nitrous-oxide–oxygen; in 100 this was supplemented with trichlorethylene, and in 300 with methyl *n*-propyl ether.

Although there was a not unexpected increase in post-operative nausea, vomiting, and disorientation when the ether was added, as compared with nitrous oxide alone, it was less than with trichlorethylene and the operating conditions were markedly improved, with fewer anoxic manifestations such as jactitation. Salivation, however, was frequently a troublesome complication. Methyl *n*-propyl ether was also used in the operating theatre with nitrous oxide for surgery of the ear, nose, and throat, and gave a smoother induction than its isomer. It was also found very helpful in aiding the transition from thiopentone to nitrous-oxide–diethyl-ether. Coughing occurred 4 times as frequently when trichlorethylene was used in this connexion.

On the few occasions when it was used to produce deep anaesthesia an irregular bradycardia was produced which disappeared on substitution of the diethyl isomer. It is concluded that methyl *n*-propyl ether should not be used for the production of deep anaesthesia, but that it has a useful role to play as an adjuvant to nitrous oxide for minor operations. *Donald V. Bateman*

99. **Subglottic Membrane. A Complication of Endotracheal Intubation**
B. ETSTEN and D. MAHLER. *New England Journal of Medicine* [*New Engl. J. Med.*] **245**, 957–960, Dec. 20, 1951. 5 figs., 17 refs.

Complications of skilful endotracheal intubation are rare. Oedema of the glottis, submucosal puncture wounds, and contusions may be caused by less careful technique. Laryngeal oedema occurs as a rule a few hours after a traumatic intubation; granuloma of the cord is a late complication.

Three cases of a new complication which occurred in a series of 800 intubations in adults performed at the New England Center Hospital, Boston, Massachusetts, are described. The patients developed acute respiratory obstruction 24 to 48 hours after the anaesthesia. Clinically the condition resembled oedema of the larynx—cough, hoarseness, stridor, dyspnoea, and suprasternal retraction—but there was no evidence of oedema of the larynx on laryngoscopy. Bronchoscopy showed an adherent subglottic membrane. Removal of this membrane gave immediate relief, but it was necessary to repeat the process about 24 hours later. In each case a Magill tube with a long rubber cuff had been used, but the tube fitted so closely that an airtight fit was secured without inflating the cuff; there had been resistance to extubation, and metal stylets had been used as introducers. All the patients were obese, short-necked women. [Anaesthesia was prolonged, though the authors do not comment on this point. In one case the operation—a cholecystectomy—took 3 hours, and in another 5 hours. The duration in the third case is not stated, but it was probably very long.]

The authors point out that the subglottic area is the narrowest part of the larynx and particularly liable to injury. If it is damaged, a slight narrowing is likely to produce obstruction. This area can easily be damaged by the tip of the tube or the stylet, or by any prolonged pressure by a deflated and wrinkled cuff.

W. Stanley Sykes

100. **Respiratory and Cardiac Control during Endotracheal Intubation**
M. JOHNSTONE. *British Journal of Anaesthesia* [*Brit. J. Anaesth.*] **24**, 36–49, Jan., 1952. 5 figs., 7 refs.

Observations were made on the effects of cyclopropane and its withdrawal, of carbon dioxide retention, of the presence of ether vapour in the inspired gases, and of tracheal intubation on cardiac rhythm. A technique of rapid intubation was devised to avoid cardiac disturbances and laryngo-bronchial spasm. Premedication consisted of atropine, gr. $\frac{1}{100}$ (0·65 mg.); morphine was avoided because it renders the respiratory centre less sensitive to CO_2 and increases the time required to achieve an adequate depth of anaesthesia. A small initial dose of thiopentone was given, and an adequate depth was rapidly gained with cyclopropane, oxygen, and CO_2. Ether vapour was added to the gases if ventricular ectopic rhythm appeared, it being said to prevent arrhythmia by increasing vagal tone through stimulation of the pulmono-cardiac reflex. Intubation was performed and nitrous oxide, oxygen, and ether were given for a short time while CO_2 was eliminated. The anaesthetic was then continued with whatever agents were appropriate to the case.

The author particularly recommends this technique in patients with heart disease, and suggests that it should be performed under electrocardiographic control. On 2,000 occasions intubation has been completed easily and quickly in patients aged from 6 weeks to 86 years, with absence of laryngeal and bronchiolar spasm except in very robust males. No serious cardiac arrhythmias were encountered. In the later cases CO_2 inhalation was begun before the injection of thiopentone, which was made as soon as the respirations showed signs of stimulation.

[The use of muscle relaxants to supplement the sometimes unreliable power of cyclopropane to overcome laryngeal and bronchial spasm does not seem to be included in this technique.] *E. K. Brownrigg*

Paediatrics

101. **The Significance of Pallor in the School-child**
J. YUDKIN. *Lancet* [*Lancet*] **1**, 239–242, Feb. 2, 1952. 16 refs.

This clinico-social survey is based on the results of the examination of some 1,200 school-children of both sexes, aged 4 to 11, in Cambridge in the early years of the last war. The degree of pallor, which was assessed clinically from the colour of the cheeks, lips, and conjunctivae, was found to be independent of haemoglobin concentration if the latter was not less than 75% of normal; it was significantly greater in children of a lower state of nutrition than the average, or who weighed less, or were slightly shorter, or had a weaker grip or a lower Tuxford index. The combination of these factors was more likely to occur in children from large families, in which economic difficulties might lead to malnutrition.
L. H. Worth

102. **A New Concept of the Etiology of Megaloureters**
O. SWENSON, E. MACMAHON, W. E. JAQUES, and J. S. CAMPBELL. *New England Journal of Medicine* [*New Engl. J. Med.*] **246**, 41–46, Jan. 10, 1952. 3 figs., 10 refs.

The association of megalobladder and megalo-ureter with megacolon has been reported. In this paper from the Boston Floating Hospital for Infants and Children consideration is given to the cases of 8 children with megalobladder and megalo-ureter but with no symptoms or radiological evidence of megacolon. The theory is advanced that such dilatation was due to faulty autonomic innervation of the bladder analogous to that known to occur in megacolon. Portions of the bladders of 7 infants and children suffering from megalobladder and megalo-ureter were examined post mortem, together with specimens from 5 living children showing the same abnormality. As controls, healthy bladders from 9 infants and children and a large section from a healthy adult bladder were examined. Though the limited value of such a study is admitted, a diminution of ganglion cells was demonstrated in the test bladders as compared with the controls and, to that extent, support given to the theory advanced.

Details are given of 4 of the 8 cases under review, stressing the great size of the bladder and ureter, with dangerous back-pressure on the kidneys leading to hydronephrosis, and the total absence of any mechanical obstruction in the urethra to account for it. Owing, it is suggested, to defective parasympathetic innervation, there is in these cases inadequate relaxation of the bladder-sphincter mechanism in preparation for and during urination and poor detrusor function, which result clinically in infrequency of voiding and incomplete emptying with its concomitant risk of infection.

Treatment was directed to giving relief to the over-distended bladder by prolonged suprapubic drainage. After 4 to 6 months of such drainage the bladder became normal in size and the ureters were much reduced: the general health was also greatly improved. The children were then taught to void at least 4 times a day and to employ manual pressure above the pubes to ensure complete emptying. The residual urine subsequently varied in amount from 10 to 35 ml. In a few cases residual urine may gradually increase until the original over-distension is reproduced, but nevertheless this method of treatment is far superior to any other at present in use.
D. P. McDonald

103. **Sinobronchitis in Children**
S. G. SCHENCK and M. SELDOWITZ. *American Journal of Roentgenology, Radium Therapy and Nuclear Medicine* [*Amer. J. Roentgenol.*] **67**, 240–258, Feb., 1952. 5 figs., 13 refs.

The authors report their results in the treatment of 168 cases of sinobronchitis in children aged 1 to 15 years by radiotherapy. The term " sinobronchitis " is used to denote a chronic or subacute infection of the nasal accessory sinuses associated with secondary infection of the bronchial mucosa. Focal lymphadenopathy generally involves the hilar or paratracheal nodes, and the nasopharyngeal adenoid tissue may be increased. Symptoms include frequent colds, protracted cough, low-grade fever, headaches, deafness, and hoarseness. Physical signs are few, but usually include some swelling, polypoid or otherwise, of the nasal mucosa and there may be a purulent post-nasal discharge. Bacteriological investigation does not reveal any one causal organism, but staphylococci, streptococci (haemolytic or otherwise), and pneumococci usually predominate. On *x*-ray examination evidence of sinus infection, especially of the maxillary antra, is found, and hilar shadows are enlarged. Routine forms of treatment—climatic, medicinal, or surgical—are stated to have little success.

The authors' technique of irradiation of the sinuses, nasal passages, and nasopharynx employs 3 portals, one anterior and 2 lateral, to each of which 150 r per week is given, up to a total of 600 r to each portal. Factors used are: 180 kV peak, anode–skin distance 50 cm., half-value layer 0·9 mm. Cu. Treatment is also given to the chest through 2 oblique anterior and 2 posterior portals, directing the rays towards the bifurcation of the trachea. The total dose to each portal is the same as above.

In a series of 168 cases (88 female, 80 male) thus treated the authors claim to have obtained complete recovery, symptomatically and radiologically, in 5·8%, marked improvement in 28%, moderate improvement in 11%, and slight improvement in 3%. Five cases are reported in detail, with radiographs showing complete clearing of the nasal sinuses. [The reproduction of chest radiographs purporting to show reduction in size of the hilar nodes after treatment are not convincing.] They claim

that radiotherapy in the small doses described provides a most effective form of treatment for this condition.

A. M. Rackow

104. **Mononuclear Pneumonia in Sudden Death or Rapidly Fatal Illness in Infants**

P. GRUENWALD and M. JACOBI. *Journal of Pediatrics* [*J. Pediat.*] **39**, 650–662, Dec., 1951. 12 figs., 39 refs.

In this paper from Brooklyn, New York, are described the pathological findings in 76 infants who died at home or in hospital, suddenly or after a brief period of prodromal symptoms; others died shortly after admission to hospital with acute symptoms. The two youngest infants in this series were aged 9 and 11 days respectively. The authors state that the incidence of such fatalities rises rapidly from this age, to reach a peak and then decline. Only a few of the infants were more than 7 months old.

In such cases as those reported the principal finding at necropsy is a diffuse mononuclear pneumonia. The exudate may be both in the lumina of the alveoli and in their walls. The characteristic cell is polygonal or oval and is somewhat larger than the usual pulmonary macrophage measuring 10 to 20 μ. The cytoplasm stains homogeneously and deeply, without inclusions. Patches of collapse may be present and oedema may occur. Less characteristic changes are seen in other organs. Hyperplasia of lymphoid tissue most commonly occurs in Peyer's patches of the intestine, in the mesenteric lymph nodes, and in the spleen. The difficulty of judging the normal appearance of lymphoid tissue in infants is emphasized. The lymphoid hyperplasia might suggest a diagnosis of status thymicolymphaticus in the absence of an adequate histological examination of the lungs. Likewise the frequent occurrence of petechial haemorrhages on the lung might suggest suffocation.

Clinical and pathological findings suggest infection as the cause of these changes, but bacteria were found in only 12 of the 76 cases. This, together with the appearances of the exudate, suggests the possibility of a viral aetiology, but no proof of this is available. It is probable that bacterial invasion is a secondary effect.

F. A. Langley

105. **Malnutrition and Anemia in Young Children. Clinical Study of Fifty Cases**

J. P. PRICE and V. M. HART. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 5–10, Jan. 5, 1952.

The authors describe a study of 50 malnourished and anaemic children in South Carolina with a view to determining not only the immediate causes of these conditions, but also the remote causes, such as environment and the care received by the children during infancy. The study was mainly clinical, laboratory investigations being limited to blood counts, examination of urine, and examination of stools for ova in some cases, and to haemoglobin estimations, which were made in all cases. The patients were chosen from the everyday practice of the authors as presenting a common and characteristic symptom-complex, and consisted of pale, tired, irritable, poorly nourished children between 1 and $3\frac{1}{2}$ years. All had some degree of hypochromic anaemia and many are said to have been underweight. [No definite criteria of malnutrition are given.] Clinical evidence of rickets was found in one-quarter of the cases, but infections and infestation with intestinal parasites were not marked. The authors are of the opinion that unbalanced diets consisting of too much milk and carbohydrate, with too little intake of foods containing iron and vitamins, caused the clinical picture described, and treated the patients with iron and multivitamin preparations. Six cases are described in illustration.

M. Baber

106. **The Lipoproteins of Serum in Infancy and Childhood—I. Lipoproteins in Normal Children**

C. H. KEMPE, H. K. SILVER, F. S. SMYTH, J. W. GOFMAN, and H. B. JONES. *Journal of Pediatrics* [*J. Pediat.*] **40**, 11–18, Jan., 1952. 8 figs., 5 refs.

This study of the serum lipoproteins of children was made by means of the ultracentrifuge, which when run at about 50,000 r.p.m. can separate out different groups of lipoprotein particles from the blood. Only particles of a density less than 1·063 are considered here. These have different rates of flotation, which are expressed in Svedberg flotation (S_f) units. Four main groups are recognized: (1) Particles with rates above 75 S_f units include the well-known chylomicrons and aggregates of smaller particles; fatty meals increase the number of particles in this group. The presence of these particles is not correlated with the presence of atherosclerosis. (2) Particles with values of 30 to 70 S_f units are the major fraction in alimentary lipaemia and are much affected by meals. (3) Particles with migration rates of 10 to 20 S_f units have molecular weights of about 3,000,000. It is claimed that these are definitely related to human atherosclerosis. (4) Particles migrating with rates of 3 to 8 S_f units are present in all adult sera and are not related to atherosclerosis.

Particle analyses were made in 147 normal children ranging in age from birth to 15 years. In male children the concentration of 10- to 20-unit particles was less than in male adults. The range for female children was similar, but impinged on the wider female adult range. In 12 cases there was no relation between the concentration of 10- to 20-unit particles in mother and her newborn child. Children can tolerate a higher intake of fat per unit of body weight than adults without showing comparable increases in concentration of 10- to 20-unit molecules.

C. L. Cope

107. **The Lipoproteins of Serum in Infancy and Childhood—II. Lipoprotein Levels in Juvenile Diabetes Mellitus**

J. H. CARR, C. H. KEMPE, H. K. SILVER, F. S. SMYTH, J. W. GOFMAN, and H. B. JONES. *Journal of Pediatrics* [*J. Pediat.*] **40**, 19–23, Jan., 1952. 6 figs., 4 refs.

By the technique of separation with the ultracentrifuge (see Abstract 106) studies were made of the particles of lipoprotein of 10 to 20 S_f units in the serum of 46 juvenile diabetics ranging in age from 7 to 20 years. The serum concentrations of these particles

were higher than in normal children for both sexes. Diabetic girls gave higher figures than diabetic boys. No correlation could be found between the serum level of these lipoprotein particles and the duration of the diabetic state, the degree of success of the diabetic control, the severity of the diabetes, or the serum level of cholesterol. The dietary intake of fat per kg. body weight had no demonstrable effect on the level of 10- to 20-S_f-unit lipoprotein particles in these children.

C. L. Cope

108. **Birth Trauma to the Proximal Femur**
G. J. BARON, N. EGEL, and F. N. ZUCK. *New York State Journal of Medicine* [*N.Y. St. J. Med.*] **51**, 2859–2864, Dec. 15, 1951. 9 figs., 3 refs.

Separation of the proximal femoral epiphysis due to birth injury is described as a distinct orthopaedic entity. In most of the reported cases it occurred during podalic version and extraction, or breech presentation and extraction, and only occasionally in vertex delivery. Swelling, slight shortening, limitation of passive movement and pain on active movement, external rotation, and sometimes slight discoloration of the thigh and crepitus are the clinical signs. Radiography shows proximal displacement of the femoral diaphysis and, soon, formation of abundant callus. The mechanism causing this injury is thought to be traction and simultaneous abduction of the lower extremity. Treatment consists in immobilization with the femur flexed at 90 degrees and partially abducted. This seems to maintain a satisfactory reduction. The authors report 2 personal cases.

W. Mestitz

109. **Kaposi's Varicelliform Eruption: Diagnosis and Treatment**
A. D. M. JACKSON and J. A. DUDGEON. *Great Ormond Street Journal* [*Gt Ormond Str. J.*] No. 2, 125–132, Dec., 1951. 3 figs., 18 refs.

An account is given of 16 cases of Kaposi's varicelliform eruption seen by the authors in the last 4 years, all but one at the Hospital for Sick Children, Great Ormond Street, London. This condition is thought to be an acute generalized virus infection occurring as a complication of eczema. It may be caused by any of several viruses, but is usually due to the virus of herpes simplex or to the vaccinia virus; all these 16 cases were caused by the virus of herpes simplex. The patients were children between the ages of 6 months and 3 years, all of whom had a history of infantile, or more rarely flexural, eczema. About half were seriously ill with prolonged fever (average 11 days) and toxaemia, while the remainder had little or no constitutional upset. The characteristic lesions were found mainly on eczematous skin and consisted of herpetic vesicles appearing in crops and rapidly becoming umbilicated and crusted.

The methods used in laboratory diagnosis are described briefly. The authors stress the importance of identifying the organism responsible for the secondary infection which is invariably present, and of determining its sensitivity to chemotherapeutic and antibiotic agents. The three main methods of diagnosis used are: (1) histology of scrapings from lesions, stained to show the presence of elementary bodies and inclusion bodies; (2) culture of bacteria (on blood agar) and virus (in the chick embryo) from swabs of the lesions; and (3) serology, both immediate and delayed, using vesicle fluid, immune sera, and stock virus. The results of these methods were on the whole satisfactory.

Treatment was directed mainly to controlling and suppressing the secondary infection, chemotherapy being based, as far as possible, on tests *in vitro*. Penicillin and a sulphonamide were most frequently used, either separately or in combination. Proflavine lotion, *N.F.* was found to assist locally. Once the acute condition was controlled, routine measures for the treatment of eczema were employed. There was no evidence that the course of the virus infection was influenced by any of the drugs given.

J. A. Waycott

110. **Rectosigmoidectomy for Hirschsprung's Disease.** [In English]
T. EHRENPREIS. *Acta Chirurgica Scandinavica* [*Acta chir. scand.*] **102**, 251–259, 1951. 11 figs., 29 refs.

A report is made on a series of 20 cases of Hirschsprung's disease treated by rectosigmoidectomy at Crown Princess Louisa's Hospital for Children, Stockholm. The age of the patients varied from 1 to 12 years, and all had a history of constipation since birth. A plea is made for the abolition of the term "idiopathic megacolon", which has been applied to numerous types of chronic constipation, in some of which there is dilatation of the colon right down to the anus and in others no dilatation at all. The diagnosis of true Hirschsprung's disease depends upon the *x*-ray demonstration of a distal narrow segment of bowel, and 3 types of this are described and illustrated. In the first a segment of variable length is markedly contracted right down to the anus; in the second the segment appears normal, but is markedly smaller than the dilated bowel above; and in the third type the proximal part of the distal segment is contracted, whereas its terminal part appears to be of normal size. Microscopy, however, shows that in all 3 types ganglion cells are absent throughout the length of the segment.

While the author's first 6 patients underwent a 3-stage operation consisting of transverse colostomy, rectosigmoidectomy, and closure of colostomy, in only 4 of the remaining 14 cases was a preliminary colostomy performed. In 2 of these 4 it was carried out as a life-saving measure, and in the other 2 it was impossible to prepare the bowel for the one-stage resection which was performed in the remaining 10 cases. Swenson's operative methods (*Surgery*, 1948, **24**, 212) were followed throughout, with two modifications: a pull-through technique was preferred to intra-abdominal division of the bowel, and in 11 instances the narrow segment only was resected. The latter modification was adopted owing to the difficulty and danger of joining the normal narrow anal canal to the dilated proximal bowel.

There were no deaths in the series. With one exception, the patients are reported to have normal sphincter control and normal bladder function, and no case of stricture of the anastomosis has occurred during a follow-

up period ranging from 6 months to 2½ years. In one instance there was incomplete removal of the narrowed segment and spontaneous bowel movements have not occurred; a second resection is planned. A breakdown of the anastomosis occurred after one of the one-stage operations and necessitated a temporary colostomy, while 2 patients suffered from post-operative urinary retention lasting a few weeks, but apart from these cases the post-operative course was uneventful, with complete relief of all symptoms and signs of the disease.

Charles Donald

111. **A Study of Abdominal Pain in Childhood**
D. J. CONWAY. *Great Ormond Street Journal* [*Gt Ormond Str. J.*] No. 2, 99–109, Dec., 1951. 5 refs.

In a study of 250 children attending the out-patient department of the Hospital for Sick Children, Great Ormond Street, London, complaining of abdominal pain an attempt was made to establish the distinctive clinical patterns of the commoner conditions giving rise to such a complaint. The importance of this is made apparent by the fact that only in 5% of the children investigated was there any serious illness; any means of making the diagnosis of the remaining 95% less difficult would thus be welcome. Although the investigation failed to discover recognizable patterns of associated features which could be used in distinguishing the various causes of abdominal pain, much interesting material was brought to light which is presented in tabular form [and should be consulted in the original]. *J. A. Waycott*

112. **Management of Gastro-enteritis at the Hospital for Sick Children, Great Ormond Street, 1948–49**
D. LAWSON. *Great Ormond Street Journal* [*Gt Ormond Str. J.*] No. 2, 110–114, Dec., 1951.

A description is given of the methods developed in the treatment of 257 cases of infantile gastro-enteritis at the Hospital for Sick Children, Great Ormond Street, London, in the years 1948–9, of which 18 (7%) were fatal. The author points out that the three main disturbances to be corrected are: (1) water deprivation, (2) electrolyte deprivation, and (3) starvation. The restoration of fluid balance is the most important In mildest cases this is done by the oral administration of half-strength Hartmann's solution by mouth for 24 hours, followed by the gradual introduction of half-cream dried milk over the next 2 or 3 days. If dehydration is moderate or severe, or if vomiting interferes with rehydration by mouth, intravenous fluids are given in quantities calculated on the basic assumptions that the infant's requirement of fluid is about 2½ fl. oz. per lb. (157 ml. per kg.) body weight in 24 hours and that a moderately dehydrated baby will have a deficit of about 1½ fl. oz. per lb. (94 ml. per kg.). This deficit should be made good in the first 12 hours, after which the rate of infusion is cut down to meet normal requirements. The correction of electrolyte deprivation and imbalance is controlled by estimation of serum chloride and potassium levels and of alkali reserve. If the serum chloride level is high (650 to 700 mg. per 100 ml.), 100 ml. of ⅙ molar sodium lactate solution is given, and if low (below 550 mg. per 100 ml.), 100 ml. of half-normal sodium chloride. Once the chloride level is brought within the normal range the usual physiological control mechanisms take over and exact calculations are no longer required. Some infants, especially those who have been ill for a long time or have received inadequate treatment, are found to have a low serum potassium level. This is corrected by the oral or intravenous administration of potassium chloride, 1 g. in 12 hours.

If intravenous infusion is continued for more than 24 hours, half-strength serum is given, alternating with 5% dextrose in half-strength Hartmann's solution. It is important to begin oral feeding as soon as is practicable, the only absolute contraindication being vomiting. If the baby has been breast fed every effort is made to supply breast milk, diluted at first. In other cases small quantities of dilute dried-milk mixtures are given frequently, the quantities and concentrations being so increased that in a favourable case the baby is getting 2½ ounces of full-strength mixture per lb. body weight in 24 hours after 2 or 3 days. "Dextrimaltose" and vitamins are added. Gastric lavage is helpful sometimes when vomiting persists and a gastric residue is present before feeds, while acidification of feeds occasionally helps. Bacterial infections are treated energetically with penicillin and sulphadiazine, or such other antibacterial substances as may be specifically indicated when the organism is identifiable. *J. A. Waycott*

113. **Report on the Work of the Gastro-enteritis Unit at the Hospital for Sick Children for the Year 1950**
J. L. GREAVES and R. G. WELCH. *Great Ormond Street Journal* [*Gt Ormond Str. J.*] No. 2, 115–117, Dec., 1951.

The authors have analysed the work of the Gastro-enteritis Unit at the Hospital for Sick Children, Great Ormond Street, London, during 1950. Altogether there were 160 admissions of 150 individual children (re-admissions within 2 weeks of discharge not being counted). Of these 150 patients, 11 have been excluded from the analysis because their symptoms were found to be due to some condition other than gastro-enteritis, such as pyloric stenosis or uraemia.

Of the 139 "true" cases of gastro-enteritis, in 84 (60·5%) some parenteral infection was present at the time of admission, while in 55 (39·5%) the condition was primary. The cases were divided into "mild" and "severe", the criterion of a severe case being the need for an intravenous infusion within 24 hours of admission; 49 cases (35·3%) were severe, and 19 other children became ill enough to need parenteral fluids at some later stage. Altogether 6 children died, giving a mortality of 4·3% Attention is again drawn to the remarkable freedom from gastro-enteritis of the wholly breast-fed baby—only 3·6% of this series being so fed—and to the fact that, on the whole, the younger the child the more serious the illness tends to be. The authors also stress the fact that nearly half their patients were infected in some hospital, nursery, or convalescent home. An interesting feature was the occurrence of phlebitis with or without local thrombosis in 25·5% of cases requiring intravenous therapy. The addition of thiomersolate in

a concentration of 1 in 10,000, or later 1 in 50,000, to the intravenous fluids increased these difficulties.

The treatment employed was that described by Lawson (see Abstract 112 above). *J. A. Waycott*

114. **The Incidence of Congenital Pyloric Stenosis Related to Birth Rank and Maternal Age**
T. McKeown, B. MacMahon, and R. G. Record. *Annals of Eugenics* [*Ann. Eugen., Camb.*] **16**, 249–259, Dec., 1951. 12 refs.

The relation between the incidence of congenital pyloric stenosis and the maternal age and the infant's birth rank was studied in a series of 478 children admitted to Birmingham hospitals with pyloric stenosis between 1942 and 1949, 853 infants selected at random from live births in Birmingham during the same period being used as a control. The first-born were shown to be most liable to develop pyloric stenosis, the incidence per 1,000 live births being 4·3 for the first birth rank, 2·8 for the second, 2·5 for the third, and 1·4 for the rest. The effect of birth rank was still found when maternal age was fixed, but association with maternal age was irregular when birth rank was fixed. The sex incidence (81·7% males) was the same whatever the birth rank. Maternal fertility was substantially the same in both the affected and the control groups. *Harry Harris*

115. **The Familial Incidence of Congenital Pyloric Stenosis**
T. McKeown, B. MacMahon, and R. G. Record. *Annals of Eugenics* [*Ann. Eugen., Camb.*] **16**, 260–281, Dec., 1951. 33 refs.

In a detailed study of the familial incidence of pyloric stenosis in 489 of the 578 cases admitted to Birmingham hospitals between 1940 and 1949, the incidence in sibs born after the first affected individual in a sibship was 58·1 per 1,000 (98·4 for male, 16·8 for female sibs). This is about 19 times the incidence in the general population. There was no appreciable increase in the incidence in cousins. Of 924 parents, 2 had certainly been affected, and 2 others possibly affected. The incidence of parental consanguinity was 0·42%, that is, much the same as in the general population. The genetical background remains obscure, but it is thought unlikely that the condition can be determined by a recessive gene with low manifestation as had been previously postulated. Environmental factors, as indicated by the association of incidence with birth rank, are regarded as of considerable importance. *Harry Harris*

116. **Epidemic Infantile Diarrhea Associated with *Escherichia coli* 111, B**
R. I. Modica, W. W. Ferguson, and E. F. Ducey. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 122–128, Jan., 1952. 16 refs.

An outbreak of diarrhoea of the newborn in hospital is described. From 80% of 56 cases *Bacterium coli* of the serological type 111, B4, was isolated. Treatment with chloramphenicol, combined with careful combating of dehydration, resulted in the relatively low mortality of 10% (6 cases).

The special strain of *Bact. coli* was usually present almost in pure culture at the onset of disease. The seminal odour of the cultures and the appearance of the colonies aided its recognition; its identification was confirmed serologically. All strains were highly resistant to streptomycin, but were sensitive to chloramphenicol, terramycin, and aureomycin, in order of increasing sensitivity. Agglutinins to low titre were demonstrated in the sera of the two patients examined. *Bact. coli* 111, B4, could be demonstrated in the throat of affected infants. It was not found in any of 193 faecal specimens from adult contacts, but was isolated from 4·7% specimens from 146 infants not suffering from diarrhoea. The evidence for believing that this serological type of *Bact. coli* is a cause of neonatal diarrhoea is summarized, although in the present case a virus could not be excluded as a possible cause of the outbreak. *D. G. ff. Edwards*

117. **The Use of Hyaluronidase in the Treatment of Dehydration in the Infant.** (Intérêt pratique de l'hyaluronidase appliquée au traitement de la déshydratation du nourrisson en état neuro-toxique)
R. Turpin, P. Chassagne, E. Housset, and P. Bouvattier. *Thérapie* [*Thérapie*] **6**, 419–424, 1951. 14 refs.

The authors report the results of the treatment of 6 infants between the ages of 14 days and 8 months, suffering from dehydration, with subcutaneous glucose–saline–bicarbonate solution to which had been added 1 turbidity-reducing unit of hyaluronidase per 2 ml. All the patients were seriously dehydrated and toxaemic; one of them died.

The advantages of this method as compared with intravenous infusion are discussed. It was found that 250 ml. of fluid was absorbed in about 10 minutes; the method is considered superior to the venous route in patients with small collapsed veins which may become obstructed with continuous use. In all the cases the authors consider that the effects of fluid administration by this route lasted longer than those of administration by intravenous injection. No untoward incidents were recorded. This method should not be used in the presence of skin infection or serious visceral disease. *A. T. MacQueen*

118. **The Pathogenesis of Recurrent Umbilical Colic in Infancy.** (La pathogénie des coliques ombilicales récidivantes des enfants)
L. Maldague. *Acta Paediatrica Belgica* [*Acta paediatr. belg.*] **6**, 53–60, 1952. 5 refs.

119. **Fibrocystic Disease of the Pancreas with Meconium Peritonitis at Birth**
F. W. Nash and J. F. Smith. *Archives of Disease in Childhood* [*Arch. Dis. Childh.*] **27**, 73–78, Feb., 1952. 7 figs., 13 refs.

120. **Chylous Ascites in Infancy**
I. Kessel. *Archives of Disease in Childhood* [*Arch. Dis. Childh.*] **27**, 79–81, Feb., 1952. 11 refs.

Nutrition and Metabolism

121. **A Contribution to the Study of Kwashiorkor ("Mbuaki" of the Kwango).** (Contribution à l'étude du kwashiorkor (mbuaki du Kwango))
C. DRICOT, P. BEHEYT, and P. CHARLES. *Annales de la Société Belge de Médecine Tropicale* [*Ann. Soc. belge Méd. trop.*] **31**, 581–630, Dec. 31, 1951. 3 figs., 20 refs.

This paper again emphasizes the world-wide distribution of kwashiorkor in the tropics, the condition being given a different name in each country. In the Kasai province of the Belgian Congo Pieraerts (*Rec. Sci. méd. Congo belge*, 1942, No. 1, 104) identified the disease "diboba" with kwashiorkor, and in this paper 9 cases of "mbuaki" from the province of Kwango are described in detail, the conclusion being reached that this too is identical with kwashiorkor. Two of the patients were infants, and the ages of the others were between 6 and 15 years.

The main clinical symptoms and signs observed were general dermatitis with scaling and depigmentation, greyish (occasionally reddish) discoloration of the scanty hair with occasional alopecia, enlargement and fatty infiltration of the liver, "deficiency bowel pattern", hypoproteinaemia with inverted albumin–globulin ratio and increase in serum gamma-globulin level, macrocytosis, and diminution of serum calcium and phosphorus levels. Oedema, stomatitis, and cheilosis were only occasionally present in this series. *Z. A. Leitner*

122. **Parenteral Nutrition with a Solution Containing One Thousand Calories per Liter**
C. O. RICE, J. H. STRICKLER, and P. D. ERWIN. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 20–27, Jan., 1952. 2 figs., 16 refs.

The authors have been able to provide full nutritional requirement after operation, in patients to whom feeding by mouth has been temporarily denied, by the use of an intravenous solution which contains sugar, amino-acids, and alcohol. Continuous intravenous administration of such a solution was shown, after experience in 109 patients, to produce no permanent harmful effects and no greater local reaction in the veins or surrounding tissues than would 5% glucose solution. The authors' solution, 1 litre of which contains the equivalent of 1,000 Calories, is made up of invert sugar (acid hydrolysate of cane sugar), amino-acids derived from the enzymatic digest of bovine plasma or the acid hydrolysate of casein, and absolute ethyl alcohol. The optimum proportions of these ingredients are 12%, 6%, and 5% respectively.

The patients chosen for the investigation were those recovering from gastrectomy, extensive intestinal resection, or other major abdominal procedures or operations upon the mouth and neck which precluded oral feeding; and a number of non-operated surgical "problems". Evidence of the nutritive value of the solution was afforded by the average gain by patients of 2 lb. (0·9 kg.) in weight during an average stay in hospital of 9 days. This gain in weight was shown not to be due to water retention. Electrolyte balance was easily maintained.

The solution was given continuously through an intravenous needle in 28% of the cases, and in the remainder it was administered through a polyethylene or polyvinyl tube, the latter being considered the method of choice. The tube is inserted into the vein in the theatre before the patient awakes from the anaesthetic; alternatively, an intradermal wheal of procaine hydrochloride is made at the proposed site of puncture. The tube is kept patent with sterile saline and a 1-ml. syringe until the patient is returned to the ward, where it is then connected to a standard intravenous apparatus and the solution is administered at the approximate rate of 1 litre in 8 hours. *Harold C. Edwards*

123. **Studies on the Effects of Cortisone and Pituitary Adrenocorticotropic Hormone (ACTH) in the Sprue Syndrome**
D. ADLERSBERG, H. COLCHER, and S. R. DRACHMAN. *Gastroenterology* [*Gastroenterology*] **19**, 674–697, Dec., 1951. 6 figs., 16 refs.

The effect of corticotrophin and, subsequently, cortisone on 5 cases of idiopathic steatorrhoea was studied. After 1 to 3 days of therapy there was, in general, a marked improvement in the clinical condition. There was an increased sense of well-being with increased appetite. Diarrhoea disappeared and the stools became formed, but steatorrhoea remained present, though usually diminished. The absorption of vitamin A in some cases was improved, and in others cortisone brought about a considerable gain in weight.

[From the results presented it seems likely that ACTH and cortisone had a beneficial effect on these patients, though with a condition such as sprue, in which there are notoriously marked remissions and relapses, a much more carefully controlled investigation would be necessary before one could be certain that the effects were all due to ACTH or cortisone.] *G. A. Smart*

124. **Cortisone in Idiopathic Steatorrhoea**
J. BADENOCH. *British Medical Journal* [*Brit. med. J.*] **1**, 356–357, Feb. 16, 1952. 12 refs.

At the Radcliffe Infirmary, Oxford, 2 untreated cases of idiopathic steatorrhoea and 2 partially treated cases have been given cortisone in doses of 100 mg. intramuscularly daily for 4 weeks. Slight decreases in fat excretion were observed in all patients, but the decreases were not statistically significant. Subjective improvement occurred in 3 of the 4 cases. The effect on the excretion of nitrogen was variable and showed no consistent trend. Cortisone thus was of no appreciable benefit. *C. L. Cope*

Gastroenterology

125. **Aureomycin in the Treatment of Diffuse Peritonitis**
A. M. RUTENBERG, S. W. JACOB, F. B. SCHWEINBURG, and J. FINE. *New England Journal of Medicine* [*New Engl. J. Med.*] **246**, 52–54, Jan. 10, 1952. 21 refs.

In continuation of their work on surgical infections (*Ann. Surg.*, 1951, **133**, 344; *Abstracts of World Surgery*, 1951, **10**, 116) the authors have treated 59 patients with diffuse peritonitis of intestinal origin with aureomycin. The bacteria isolated from the peritoneal exudates included *Bacterium coli* in 23 cases, staphylococci in 17, *Proteus vulgaris* in 9, *Pseudomonas aeruginosa* in 8, and streptococci in 5. Aureomycin hydrochloride buffered with sodium glycinate was administered intravenously to all patients during the acute phase. The usual dose was 500 mg. of the drug dissolved in 500 ml. of isotonic saline or dextrose solution twice daily. Once the disease process was controlled, parenteral therapy was replaced by oral aureomycin or by penicillin.

The response was excellent in 47, doubtful in 6, and poor in one; 5 of the patients died, although in 2 the infection was controlled. Of the 47 patients who responded favourably, 31 received aureomycin only, 8 were given aureomycin alone after failing to respond to penicillin, and 2 responded only after aureomycin was added to penicillin; the remaining 6 patients received aureomycin with penicillin from the beginning of therapy. In 12 cases (20%) there were signs of gastro-intestinal irritation such as stomatitis, oesophagitis, and diarrhoea. No other toxic effects were noted.

A. W. H. Foxell

126. **Esophageal Hiatus Hernia of the Diaphragm. The Anatomical Characteristics, Technic of Repair, and Results of Treatment in 111 Consecutive Cases**
R. H. SWEET. *Annals of Surgery* [*Ann. Surg.*] **135**, 1–13, Jan., 1952. 9 figs., 1 ref.

In a series of 111 consecutive cases of hernia of the diaphragm reported by the author, the two most common types were the sliding hernia (often erroneously thought to be associated with a short oesophagus) and the para-hiatal hernia (more commonly known as para-oesophageal). In this latter type the cardia is at the normal site and the sphincter is competent. Rotation of the greater curve of the stomach may occur to produce a form of volvulus. In exceptional cases the two types may be combined; another rare type is the congenital short oesophagus with a thoracic stomach. [Some authorities would consider this secondary to reflux oesophagitis.]

Repair is carried out through a resection of the 8th rib; the two main steps in the operation consist in elimination of the sac by either plication or excision, and suture of the hiatus. This should be reduced to a size which, with a Levin tube in the oesophagus, admits an index finger without compressing the tube.

The indications for operation are pain (in 6 cases it simulated cardiac pain), blood loss, epigastric distress, and obstruction. In this series of 111 cases there were no post-operative deaths; post-operative complications included atelectasis, embolism, empyema, and pneumothorax, occurring in a total of 16 patients. In some patients in whom the vagus nerves were resected there were specific complications. The results after 6 months showed the majority to be relieved of their symptoms. In 11 the symptoms, though ameliorated, were still present; in one of these it was found later that the pain, incorrectly attributed to the hernia, was due to a neoplasm of the pancreas.

J. E. Richardson

127. **A Four and One-half Year Analysis of Tantalum Gauze Used in the Repair of Ventral Hernia**
W. J. FLYNN, A. E. BRANT, and G. G. NELSON. *Annals of Surgery* [*Ann. Surg.*] **134**, 1027–1034, Dec., 1951. 3 figs., 16 refs.

In 45 cases of large ventral hernia tantalum gauze was used for repair. Patients were followed up for periods up to 55 months, only one recurrence being observed. Moreover, this developed not through, but alongside, the repair. It is claimed that tantalum gauze is a successful aid in the repair of large herniae, leaving the patient with a pliable, soft scar in which little pain is experienced. The authors further state that sepsis clears up satisfactorily in spite of the inlay. They warn against putting the metal close to bone, for it appears then to be the cause of pain. Some 3 months or so after operation the gauze is found to have become fragmented in all cases, but this does not seem to weaken the repair.

H. Daintree Johnson

OESOPHAGUS

128. **Benign Stricture of the Oesophagus.** (Estenoses benignas do esôfago)
F. APRIGLIANO, F. CARNEIRO DA CUNHA, and L. GUIMARÃES. *O Hospital* [*Hospital, Rio de J.*] **41**, 33–52, Jan., 1952. 16 figs., 10 refs.

In spite of there being many causes of benign stricture of the oesophagus, the symptoms are nearly the same in all cases, namely, dysphagia (even for liquids), pain, and regurgitation; nutritional changes and deficiency states may follow. The causes are classified as congenital, traumatic, inflammatory, and post-surgical. Of the congenital variety the commonest is that in which the proximal segment ends blindly and the distal segment communicates with the bronchial tree; early diagnosis of this type (confirmed by the injection of 1 or 2 ml. of iodized oil) is important as it is amenable to surgery. The other congenital lesions are usually diagnosed about the 6th month. In the traumatic group, external

trauma is a very uncommon cause (one case is reported of this nature), but ingested foreign bodies which remain in the oesophagus may lead to stricture. A large percentage of strictures are due to swallowing corrosives, usually accidentally and therefore commoner in children. Prophylactic oesophageal dilatation in the acute stage is sometimes necessary; if the oesophagus becomes severely stenosed then a gastrostomy and retrograde dilatation with Tucker's and Plummer's metallic sounds gives reasonable results. Peptic oesophagitis may complicate this procedure.

Oesophageal stenosis following diphtheria, syphilis, or other infections is scarcely ever seen nowadays. Stenosis following peptic ulceration of the oesophagus is best treated either by dilatation or resection. Cases of cardiospasm should be examined endoscopically, not only for diagnostic purposes but also to ascertain the state of the oesophageal mucosa. Conservative treatment with balloons is usually preferred. In these cases the patients require follow-up examination with possibly repeated treatment. Stenosis may also follow operations on the lower oesophagus and stomach, but can often be treated by simple dilatation. The paper contains reports on 9 illustrative cases, with radiographs.

Paul B. Woolley

129. **Hiatal Hernia, Brachy-oesophagus and Incompetence of the Cardia in Children.** [In English]
G. PETTERSSON. *Acta Chirurgica Scandinavica* [*Acta chir. scand.*] **102**, 321–326, Jan. 26, 1952. 9 refs.

This short report is based on 8 cases of children who had been vomiting from birth or shortly after on account of an abnormality of the cardia. Three factors are said to be responsible for the normal closure of the cardia: (1) the intrinsic muscle; (2) the oblique entrance of the oesophagus into the stomach; and (3) the diaphragmatic crura, especially the right, which bound the hiatus. If these fail, reflux of gastric contents may occur and eventually lead to oesophagitis and peptic ulceration, and the resulting scarring to stricture and shortening, so that haematemesis and dysphagia may develop as added symptoms.

In 2 of the patients no anatomical disturbance of the cardia was present, but an insufficientia cardiae simplex or cardio-oesophageal relaxation, presumed to be due to a neurological imbalance. The other 6 patients had a hiatal hernia, with the upper part of the stomach in the chest and the oesophagus shortened. In such cases the hernia does not exactly resemble the sliding hiatal hernia of adults, as there is no peritoneal sac; it is probably congenital, but the inflammatory changes in the oesophagus occur after birth.

Three of the patients with hernia were successfully treated by a left phrenic crush. This was intended as a preliminary to thoracotomy, but it immediately relieved the vomiting; in one case, although the function of the diaphragm recovered there was no further vomiting for 18 months. In 3 other patients the hernia was repaired by thoracotomy and suture of the hiatus. This treatment was also effective in the case of the 2 children with insufficientia cardiae. *M. Meredith Brown*

130. **On the Treatment of Congenital Atresia of the Esophagus. Principles of a New Method, with Preliminary Case-reports.** [In English]
G. PETTERSSON and G. HAGLUND. *Acta Chirurgica Scandinavica* [*Acta chir. scand.*] **102**, 327–330, Jan. 26, 1952. 1 fig., 8 refs.

In the normal baby the lung is partially atelectatic at birth; full expansion is achieved within about 2 weeks, and is brought about by the diaphragm reducing the intrapleural pressure. An intact chest wall is thus important, and it is desirable to avoid an operation which severely damages it—such as the extrapleural anastomosis advised for congenital atresia of the oesophagus —until full expansion has occurred. The respiration of babies with atresia is nearly always further impaired by aspiration pneumonia, which has already occurred when the surgeon first sees them. The authors have therefore devised the following regimen, which has been used successfully at Gothenburg, Sweden, in 2 cases.

As soon as possible tracheotomy and gastrostomy are performed. Two catheters are introduced through the latter—one for aspiration of the stomach to avoid reflux through the tracheal fistula from the lower oesophageal segment usually present, and the other into the duodenum for feeding. Tracheo-bronchial toilet can be carried out through the tracheotomy; antibiotics and transfusions are given, so that the baby's respiration and nutrition are as efficient as possible. After about 14 days a transpleural oesophageal anastomosis and repair of the fistula are carried out, with pleural drainage for 2 days. A week later oral feeding is started, and shortly afterwards the tracheotomy and gastrostomy tubes are removed. *M. Meredith Brown*

131. **The Results of Radical Surgical Extirpation in the Treatment of Carcinoma of the Esophagus and Cardia. With Five Year Survival Statistics**
R. H. SWEET. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 46–52, Jan., 1952. 4 figs., 2 refs.

This report from the Massachusetts General Hospital on the results of operations performed up to Jan. 1, 1952, for radical cure of carcinoma of the oesophagus and cardia covers 254 cases and extends back 12 years, when the first resection was carried out by the author. [This must form the largest and most comprehensive series available.] They are analysed from the point of view of (*a*) cure, and (*b*) of palliative treatment. The operative mortality for resection of the lower oesophagus or upper part of the stomach was just under 12%; for mid-thoracic growths just under 25%. (These figures include early cases treated before standardization of the author's technique and without antibiotics.) The effect of age on operative mortality is considered. The cure rate is based on those who survived operation [in Great Britain it is usual to include the operative deaths], and 17·5% of such patients with tumours of the lower oesophagus or upper part of the stomach, and 4% with mid-oesophageal lesions, were alive after 5 years.

An analysis of the prognosis is made in relation to: (1) site of growth; (2) involvement of lymph nodes;

and (3) histological type of the tumour. As a method of palliation resection is considered to be superior to bouginage, the effect of which is very transient, and to *x*-ray therapy, the results of which have been disappointing.

[This article should be read in full by those interested in diseases of the oesophagus. One of the figures is a little misleading; the expectation of life of a group of patients whose ages vary from under 45 to 75 cannot be compared with the expectation of life for the average age of the whole group—53 years in this case—as mortality increases for each decade.] *J. E. Richardson*

132. **Carcinoma of the Esophagus or Cardia of the Stomach. An Analysis of 172 Cases with 81 Resections**

Y. K. Wu and H. H. Loucks. *Annals of Surgery* [*Ann. Surg.*] **134**, 946–956, Dec., 1951. 17 refs.

A series of 172 cases of carcinoma of the oesophagus is reported from Peking, together with an account of the 10-year follow-up of 12 other patients previously described.

In 44 patients no operation was possible, for the usual reasons. Of the 128 (74·7%) who were explored, 81 underwent resection (47·1% of patients seen and 63·8% of explorations). As noted by Garlock, by Sweet, and by Strieder, the operability rate is thus better than in cancer of the stomach or lung. Death resulted from 17·3% of the resections [a very low figure, excelled only by Sweet's 15·9%], and only 7·7% (2 out of 26) during the most recent year of the series. Of 13 patients who underwent transthoracic gastrectomy with lower oesophageal resection, only one of them died before leaving hospital.

It was found desirable always to drain the pleural cavity, and both sides were drained, by a single tube, when both sides were known to have been opened. The causes of death are analysed, and it is suggested that many deaths could be avoided with improvements in technique.

The ages of the patients were between 33 and 75 years, half of them being in the 51–60 decade. Only one of those under 40 had a resectable tumour. The average length of history in the patients with non-resectable lesions was 2 months longer than in those with resectable lesions. In nearly 50% of the cases of cancer the growth was in the lowest third of the gullet, and in half of these was considered to have been of gastric origin. Only in 4% was the tumour above the arch of the aorta, and these cases, as usual, gave lower operability and higher mortality rates.

There is an interesting section on aetiology, in which the high incidence of malignant oesophageal disease in China, Japan, Russia, and Scotland is mentioned and dietetic factors are discussed. Of the patients in the present series, 50% were discovered to be heavy drinkers of *pai kan*, a strongly alcoholic distillate of kaoliang, whereas only 12% of 200 controls could be so defined. The proportion of these controls with a family history of death from dysphagia was 5·5%, whereas in the 172 patients with cancer it was 22·1%. "If this means no more", write the authors, "it suggests that individuals with family histories of carcinoma of the oesophagus should refrain from drinking *pai kan*."

In the follow-up of 7 patients who had survived resection of growth which had been performed 10 years previously it was found that 2 had died during the first year after operation, 2 in the second year, 1 in the third year, 1 later than the fifth year, probably from something other than cancer, and the remaining one was still alive and well. The fate of those in the more recent series is as follows:

Patients Treated by Resection

Died in hospital		14
Died after discharge:		
Less than 6 months after operation	7	
6 months to 1 year after operation	10	
1 to 2 years after operation	5	
		22
Still living:		
Less than 6 months after operation	18	
6 months to 1 year after operation	9	
1 to 3 years after operation	12	
Over 3 years after operation	2	
		41
Not followed up		4
Total		81

Patients Not Treated Surgically

Died in hospital		7
Died after discharge:		
Less than 3 months after	39	
3 to 6 months after	8	
Over 6 months after	5	
		52
Still living:		
Less than 3 months after discharge	13	
3 to 6 months after discharge	3	
Over 6 months after discharge	1	
		17
Not followed up		15
Total		91

The paper closes with an appeal for earlier investigation, preferably at the stage of "occasional choking on food or transient difficulty in swallowing", and acceptance of Garlock's aphorism that any disturbance of swallowing in a male over 35 must be regarded as due to carcinoma until proved otherwise.

[This is an excellent paper describing work of the highest order.] *H. Daintree Johnson*

STOMACH AND DUODENUM

133. **Primary Lymphosarcoma of the Stomach**

G. Crile, J. B. Hazard, and K. L. Allen. *Annals of Surgery* [*Ann. Surg.*] **135**, 39–43, Jan., 1952. 18 refs.

In this paper 19 cases of lymphosarcoma of the stomach treated at the Cleveland Clinic, Ohio, during the past 15 years are analysed. The variety of lymphosarcoma considered is that termed by Ewing the "malignant lymphocytoma" or "lymphocytic lymphosarcoma". The tumour starts in the mucosa or submucosa, spreads in the lines of least resistance, and infiltrates diffusely, and there may be shallow multiple ulcers. Extension to the peritoneum is uncommon. The sites of origin of the neoplasm are similar to those favoured by carcinoma—

the pyloric or prepyloric area, the lesser curve, the posterior surface, or the entire body of the stomach. It is difficult or impossible to diagnose the condition pre-operatively. Clinically, the average age of onset is 54 years (carcinoma 61 years), and epigastric pain, vomiting, sometimes haemorrhage, and loss of weight are the presenting symptoms. Anaemia is rare and achlorhydria uncommon. Treatment is by subtotal or total gastrectomy with subsequent irradiation, and in inoperable cases irradiation alone following biopsy.

Of the patients operated upon, 13 were alive and well an average of 5 years after operation, and 2 others died of other causes after 4 and 10 years respectively without recurrence.

[These results are surprising and heartening.]

Peter Martin

134. **Modification of the Hofmeister Gastrectomy Operation**

M. WEINSTEIN and M. ROBERTS. *New York State Journal of Medicine* [*N.Y. St. J. Med.*] **52**, 86–90, Jan. 1, 1952. 5 figs., 11 refs.

The Hofmeister technique of gastrectomy is to close the lesser-curve portion of the cut end of the stomach and make the stoma on the side of the greater curvature. The authors have in 54 cases made the stoma on the lesser-curve side, closing the greater-curvature half of the cut end. An antecolic gastro-jejunal anastomosis was made placing the efferent loop towards the greater curve in some cases, and more recently towards the lesser curve. They claim that this operation is technically easier, more radical, gives better physiological results, and is less productive of the dumping syndrome. [No adequate proof is given of any of these advantages.]

Norman C. Tanner

135. **Factors Influencing the Rate of Healing of Gastric Ulcers. Admission to Hospital, Phenobarbitone and Ascorbic Acid**

R. DOLL and F. PYGOTT. *Lancet* [*Lancet*] **1**, 171–175, Jan. 26, 1952. 4 refs.

An attempt was made to assess by statistical methods the factors influencing the rate of healing of gastric ulcer in 64 patients observed for 3 months at the Central Middlesex Hospital, London. The results of in-patient treatment on a regulated gastric diet (Jones, *Brit. med. J.*, 1949, **2**, 1463) in 32 cases was compared with that of out-patient treatment with advice to follow a "convalescent" diet in the other 32 cases. Standard alkaline powders were given to all patients to be taken at their own discretion for relief of pain. Most of the cases had not previously been diagnosed, and ulceration was confirmed by gastroscopy before starting the trial. While the length of history varied from a few weeks to several years, the degree of variation was comparable in the two groups.

In-patient treatment led to a significantly higher rate of healing, as judged by measurement of the ulcer crater in serial radiographs and by the severity of the symptoms, though there was some disparity between the relief of symptoms and the extent of healing of the ulcer. The rate of healing was somewhat greater after one month than after three. It was not possible to say whether the effective therapeutic factor was rest in bed, supervision of diet, or the possible psychological effect of withdrawal from home surroundings. After discharge from hospital, when the patient was advised to follow the same "convalescent" diet as was used for out-patient treatment, healing usually continued, but unless the size of the ulcer had been reduced to at least one-third of its original size in one month it was unlikely to heal completely in three. While in 8 cases (5 in-patients, 3 out-patients) the ulcer was completely healed in 1 month and in 17 in 3, these figures are not comparable with those obtained in other series, rapidly healing cases being excluded since factors influencing the rate of healing, rather than the cure-rate, were being tested. The giving of phenobarbitone (100 mg. daily) or ascorbic acid (150 mg. daily), or both, to unselected patients in each group did not increase the rate of healing as compared with that in controls given inert tablets, and made little or no difference to the patients' symptoms.

J. David DeJong

136. **Peptic Ulcer: Medical Cure by Efficient Gastric Acid Neutralization**

N. E. ROSSETT, F. H. KNOX, and S. L. STEPHENSON. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 98–109, Jan., 1952. 2 figs., 18 refs.

The work described in this paper, which was carried out between 1943 and 1950 at various hospitals of the U.S. Veterans Administration, is regarded by the authors as an extension of that of Sippy, and the title of the paper is a deliberate paraphrase of that used by the latter in his original publication in 1915. The efficacy of various antacids in cases of peptic ulcer was estimated by daily aspiration of gastric juice, the patient having been placed in the prone Trendelenburg position after passing a 36-F Ewald stomach tube. The antacids were given every 2 hours, and the dose increased as required to secure neutralization. Bed rest was continued for 5 days after cessation of all pain (usually 10 days in all) or until radiological evidence of healing was obtained. Diet was generous in uncomplicated cases (100 to 150 g. protein daily), but was modified in those with bleeding or obstruction; belladonna was added (1·5 ml. of the tincture every 6 hours in patients over 45 years of age), and was found to reduce the amount of antacid required to produce "free achlorhydria". In 1,288 consecutive cases with uncomplicated ulcers the results were uniformly gratifying. There were only 2 deaths in 168 consecutive cases of bleeding peptic ulcer; and only 3 of 129 obstructed cases failed to respond. The longest-acting antacid was found to be a combination of "milk of magnesia" with aluminium hydroxide, but in the presence of protein in the stomach this tends to form a coagulum which is constipating and which may remove buffer. Where protein was present, therefore, calcium carbonate, 0·9 g., and magnesium oxide, 0·1 g., in 200 ml. of milk, the proportions of the mixture being varied to control bowel movement, proved to be a long-acting antacid without any of the above disadvantages and without "rebound".

D. Preiskel

137. **Effects of ACTH and Cortisone upon the Stomach: its Significance in the Normal and in Peptic Ulcer**
S. J. Gray, J. A. Benson, H. M. Spiro, and R. W. Reifenstein. *Gastroenterology* [*Gastroenterology*] **19**, 658–673, Dec., 1951. 4 figs., 21 refs.

In 6 patients with essentially normal stomachs, in one patient with gastric ulcer, and in one with a healed duodenal ulcer, corticotrophin administered in doses of 100 to 160 mg. daily was found, after 7 to 14 days, to increase the basal secretion of hydrochloric acid and of pepsin by the stomach by as much as 200%. The values obtained after about 7 days of hormone therapy, even in the normal patients, were equivalent to the values usually obtained in subjects suffering from peptic ulceration. The secretion of uropepsin in the urine was also investigated and found to be considerably increased and roughly parallel with the increase in pepsin secretion. It appears to be necessary for a certain continuous adrenocortical over-activity to occur before these changes are brought about, for single doses of cortisone do not have any apparent effect on gastric secretion.

The patient with gastric ulcer developed severe pain and other symptoms suggestive of impending perforation, and in fact at subsequent operation there was found to be an acute exacerbation of the chronic gastric ulcer. In the patient with the healed duodenal ulcer active ulceration developed 2 months after the discontinuance of corticotrophin therapy.

The authors conclude that the types of stress which normally give rise to stimulation of the pituitary–adrenocortical axis may also result in an increase in the hydrochloric acid and pepsin secretion of the stomach, and that the prolonged administration of these hormones to patients with peptic ulcer may constitute a real hazard.

G. A. Smart

138. **Surgical Management of Massive Hemorrhage from Peptic Ulcer**
F. Glenn and C. S. Harrison. *Archives of Surgery* [*Arch. Surg., Chicago*] **63**, 766–773, Dec., 1951. 2 figs., 9 refs.

In this paper from the New York Hospital–Cornell Medical Center is described the surgical management of 58 patients with massive haemorrhage from peptic ulcer. The criteria for this diagnosis were a haemoglobin level of less than 10 g. per 100 ml. or an erythrocyte count below 3,700,000 per c.mm. in a patient with clinical signs of bleeding.

Of the 58 patients, 49 were in good or fair condition on admission, 4 in very poor condition, and 5 in shock. Only 14 out of the total entered hospital within 8 hours of the onset of haemorrhage. The average age in the series was 52·6 years. Six patients had previously had gastro-enterostomy and one had had gastrectomy.

In all but one case conservative measures were relied on at first, these consisting of multiple small transfusions, 4-hourly injections of morphine when the respiration rate exceeded 14 per minute, and nothing at all by mouth until bleeding had ceased. Haemorrhage continued in 5 patients and started again in 7 of those in whom it had stopped. Emergency operation was needed in 13 patients, but in the other 45 it was possible to postpone surgical intervention until the condition was under control and the usual pre-operative studies had been completed. No patient was lost while under preparatory management, but 2 died after gastrectomy—a mortality of 3·5%.

Gastrectomy is recommended as the operation of choice, with removal of the ulcer where possible.

H. Daintree Johnson

139. **The Role of the Cerebral Cortex in the Regulation of the Blood Sugar Level after Insulin Injection in Cases of Peptic Ulcer.** (О роли коркового механизма в регуляции сахара крови после введения инсулина у язвенных больных)
P. B. Levin and M. B. Mamedova. *Клиническая Медицина* [*Klin. Med., Mosk.*] **29**, 54–58, Dec., 1951. 2 figs., 9 refs.

Insulin hypoglycaemia was induced in 3 healthy subjects while awake and while under chloral hypnosis, and in 17 patients suffering from peptic ulcer under the same conditions. The dose of insulin in the healthy subjects was 20 units, but in the cases of ulcer only 16 units was given owing to the more severe effects. The response was always greater in the same subject under chloral hypnosis than when awake. The fall in blood sugar level was greater in the patients with peptic ulcer than in the normal subjects, as was the increase in effect during sleep; but the difference between the curves in waking and sleeping patients was less pronounced than in normal persons. In chloral hypnosis the initial blood sugar level was on the average higher than in the waking state, although the fall was greater in the first 45 minutes.

These findings are explained as being due to the diminished inhibitory effect of the cerebral cortex under the influence of chloral and also in cases of peptic ulcer as compared with normal subjects.

L. Firman-Edwards

140. **The Neurovascular Mechanism of the Mucous Membrane of the Stomach**
H. B. Benjamin. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **93**, 672–675, Dec., 1951. 8 figs., 11 refs.

The effect of vagal stimulation on the vessels in the mucous membrane of the dog's stomach was studied by microradiography and photomicrography. [The number of specimens used is not stated.] After intraperitoneal injection of pentobarbitone sodium the right vagus was isolated in the chest, cut, and the distal end stimulated electrically. After stimulation, the blood vessels were injected via the descending thoracic aorta with 20% "neosilvol" followed by 10% bismuth oxychloride. After fixation in 10% neutral formalin for 24 hours, blocks of tissue were removed from the pyloric region. These were sectioned in celloidin at 250 μ and the sections taken through 95% and absolute alcohol, chloroform, and xylol and finally mounted on slides. Similar sections were made of the unstimulated stomach for comparison. Some of the sections were placed on a film

of shellac in direct contact with an ortho-press photographic plate in a light-tight compartment and exposed for 1 to 2 hours to grenz rays of about 2Å wavelength; the plates were then photographed through a microscope giving a magnification of ×250. The results, however, were not so good as those obtained by conventional photomicrography.

It was found that whereas in the unstimulated stomach the rich network of blood vessels in the pyloric region could be easily visualized, after right vagal stimulation few of the fine vessels could be seen, and the larger vessels were packed with injection mass and showed numerous interconnecting " shunting channels ". The author believes that the anaemia of the mucous membrane thus produced may be a factor in ulcer formation.

D. B. Moffat

141. **A New Method for Cytological Diagnosis in Gastric Disease.** (Über eine neue Methode zur Zytodiagnostik der Magenkrankheiten)
N. HENNING and S. WITTE. *Deutsche Medizinische Wochenschrift* [*Dtsch. med. Wschr.*] **77**, 1–4, Jan. 4, 1952. 9 refs.

A method for obtaining specimens from the gastric mucosa for cytological study is described. A small rubber sponge mounted on a long coiled-wire probe is enclosed in a special stomach tube, the open end of which is covered by a thin " cellophane " diaphragm. The tube is passed into the stomach; the sponge is forced through the cellophane, rubbed over the stomach lining, and withdrawn into the tube before the latter is removed from the stomach. Smears made from the sponge are either mounted for phase-contrast microscopy or fixed in ether–alcohol and stained with safranin followed by May–Grünwald–Giemsa stain.

Smears from normal stomachs show scanty cells or cell-clumps, predominantly of tall columnar-epithelial type. In the hyperacidity associated with duodenal ulcer, abundant cells of surface-epithelial and various glandular types are seen. Histamine-refractory achlorhydria is characterized by abundant pleomorphic cells, mainly of surface-epithelial type, and by many leucocytes and phagocytes; in pernicious anaemia vacuolated and granular cells are characteristic. From cases of carcinoma of the oesophagus or stomach typical tumour cells are obtained, recognizable mainly by their increased nuclear–cytoplasmic ratio, large multiple nucleoli, granular cytoplasm, and nuclei of low refractility on phase-contrast illumination. The method is said to be easy and safe, and the authors consider it a valuable adjunct to gastroscopy and radiography in the diagnosis of cancer of the oesophagus and stomach.

M. H. Salaman

142. **Colonic Replacement of the Stomach. Early Results of Radiological Investigation**
B. B. HARRISON. *Lancet* [*Lancet*] **1**, 25–28, Jan. 5, 1952. 6 figs., 5 refs.

The author examined radiologically 30 patients in whom a length of transverse colon had been stitched between the upper gastric pouch and the duodenum after partial gastrectomy. He found that the appearances approximated to normal. Swallowed barium filled the stomach remnant and then the colon segment. If only 2½ to 3 in. (6·25 to 7·5 cm.) of colon had been interposed intermittent emptying into the duodenum began almost at once, but if 6 to 7 in. (15 to 17·5 cm.) of colon was used there was some delay before emptying began. Up to 2 or 3 months after operation there was delay in gastric emptying with retention of barium in the stomach for 12 hours, but at 6 months there was no residue 4 hours after the meal.

By the end of 3 months in some cases, and 6 months in almost all, retrograde waves of peristalsis—that is, in the normal direction for the transverse colon, from right to left—occurring in the colonic segment about once every 4 minutes were to be seen.

After this operation the rate of passage of barium through the small intestine was the same as before gastrectomy in half of the cases, and a little slower in the other half.

Norman C. Tanner

143. **Critique of Mushroom-catheter Treatment of Acute Gastroduodenal Perforation**
G. V. ECKHOUT. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 111–118, Jan., 1952. 18 refs.

In this paper, from the University of Colorado School of Medicine, Denver, the author seeks to determine the value of the method of treating perforated duodenal and gastric ulcers by catheter drainage as recommended by Neumann in 1909. For this purpose the results in 44 cases treated by the catheter method are compared with those obtained in 104 cases treated by orthodox suture—both series having been admitted to the same hospitals during roughly the same period of time. The mortality in the former was 13·6% as contrasted with only 5·7% in the latter. Of the 6 deaths following catheter drainage 3 were considered to be directly attributable to the method of treatment employed. Duodenal fistula was, not surprisingly, a troublesome complication sometimes after this form of treatment, and the stay in hospital was usually longer than after simple suture.

These findings lead the author to conclude that catheter drainage is unquestionably inferior to conventional suture in the management of gastro-duodenal perforation.

J. C. Goligher

144. **The Role of the Duodenal Digestive Secretions in the Pathogenesis of Peptic Ulcer. Therapeutic Implications.** (L'importance des sécrétions duodéno-pancréatico-biliaires dans la pathogénie des ulcères gastro-duodénaux. Déductions thérapeutiques)
M. R. CARVAILLO. *Archives des Maladies de l'Appareil Digestif* [*Arch. Mal. Appar. dig.*] **40**, 1153–1169, Nov., 1951. 8 figs., 30 refs.

While not discounting other contributing factors in the pathogenesis of peptic ulcer, the author puts forward the thesis that the slight physiological reflux of the digestive secretions from the duodenum, pancreas, and liver plays a definite role in the prevention of gastric and duodenal ulceration. If this reflux is prevented, either by pyloric or duodenal narrowing, by surgical deviation of the secretions, or by alteration of the character of the

secretion itself, then ulceration may develop. This thesis is supported by three types of observation: (1) clinical and radiological observations that spasm of the bulb or pylorus may precede the onset of a period of ulcer activity, though it is admitted that this is not yet backed by a significant series of cases; (2) the experimental production of ulcers in animals by various established operative procedures which prevent the duodenal secretions from entering the stomach; and (3) the results of medical and surgical therapeutic techniques aimed at alleviating duodenal and pyloric spasm or introducing the duodenal secretions into the stomach.

The protective quality of the duodenal juice is said to lie not in its alkalinity, which is insufficient in quantity to neutralize all the gastric acid, but rather in some unknown factor in it. *J. David DeJong*

INTESTINES

145. **Pilonidal Disease—its Evaluation and Treatment. A Report of 500 Cases**
H. W. PARKER. *American Journal of Proctology* [*Amer. J. Proctol.*] **2**, 111–120, Sept., 1951. 8 figs., 7 refs.

The author reviews the literature of pilonidal disease, and states that the recurrence and morbidity rates of this condition are very high. He considers the causes of delayed healing to be secondary infection and fungus infection, and the high rate of recurrence to be generally due to faulty surgery with inadequate excision of the sinuses. He has found that the local application of wet tyrothricin dressings has helped to combat infection, and in resistant cases he suggests that this may be supplemented by anti-fungus powder.

The operative treatment recommended consists in complete excision of the tracts; primary suture is never carried out, but the edges of the skin are brought down to the fascia over the sacrum by interrupted stay sutures. The patient is nursed on his face for a few days and the stitches are removed in 4 days. In the majority of the 500 cases treated by this method the wounds healed in 3 to 4 weeks and in less than 1% did it fail.
E. C. B. Butler

146. **The Role of *Clostridium welchii* in Strangulation Obstruction**
I. COHN and H. R. HAWTHORNE. *Annals of Surgery* [*Ann. Surg.*] **134**, 999–1006, Dec., 1951. 1 fig., 17 refs.

The experiments described in this paper were designed and carried out at the University of Pennsylvania to show the part played by *Clostridium welchii* in the causation of death in closed-loop bowel obstruction.

The first step was to show that lengths of bowel, closed at both ends and placed in the peritoneal cavity of 4 dogs, caused death in from 18 to 30 hours, with signs similar to those in strangulation-obstruction. The animals remained fairly well for a number of hours, but then deteriorated very rapidly until death occurred. Fluid from the peritoneal cavity was pinkish, odourless, and coagulable in the early stages, but later became malodorous, dark, and persistently fluid.

In a second series of dogs an attempt was made to sterilize loops of bowel, which were then implanted in dogs as before. Only 2 loops failed to become infected, but these dogs remained well, thus establishing that truly sterile bowel tissue can be tolerated without ill effect.

Several more dogs then received various doses of washed clostridia injected into the peritoneum without detectable illness resulting. Similar doses were now introduced into 5 dogs at the same time as lengths of bowel " autoclaved as before ". Three of the dogs died, the 2 survivors being those which received the smallest doses of clostridia. It is concluded that death in experimental strangulation-obstruction, when it occurs in spite of adequate fluid and electrolyte control, is due to the exotoxins of *Clostridium welchii*. Details are given of blood chemistry and leucocyte counts.
H. Daintree Johnson

147. **The Use of Aureomycin in Experimental Intestinal Obstruction**
J. H. MORTON, F. W. FURTH, J. R. HINSHAW, and J. A. SCHILLING. *Annals of Surgery* [*Ann. Surg.*] **134**, 1007–1012, Dec., 1951. 23 refs.

The authors, at the University of Rochester School of Medicine and Dentistry, New York, produced experimental intestinal obstruction and strangulation in dogs in an attempt to assess the benefit of treatment with aureomycin. As no other treatment was given, no animal survived more than 5 or 6 days, and many were dead in under 36 hours; moreover, the survival times showed such wide variations in all groups, treated and untreated, that little could be deduced. It was concluded, however, that " because of its wide bacterial spectrum aureomycin must be considered as having a place in the treatment of acute intestinal obstruction ", though " it must not be considered a substitute for surgery or for other important supportive measures ".
H. Daintree Johnson

148. **Results of the Surgical Treatment of Ulcerative Colitis**
C. B. RIPSTEIN, G. G. MILLER, and C. M. GARDNER. *Annals of Surgery* [*Ann. Surg.*] **135**, 14–21, Jan., 1952. 6 figs., 4 refs.

The thesis of this paper is that the post-operative care of a patient is easier if the organ causing the physiological disturbance is removed. In the acute case of ulcerative colitis the patient is too ill for the colon to be left *in situ*: in the chronic case the risk of malignant degeneration is too serious to warrant leaving the colon; and in either a colectomy may enable a useful member to be restored to the community. In the authors' words: " Primary resection of the colon removes the diseased bowel and immediately eliminates the factors of blood and protein loss and toxic absorption ". Ileostomy without resection of the colon simply adds water and electrolyte loss to the protein loss from the colon. The authors prefer a subtotal colectomy, the remaining portion of colon being removed later with the rectum, though in some cases the whole may require immediate removal.

In all, 72 cases (38 acute and 34 chronic) were operated on. There were 3 deaths, one from peritonitis due to perforation of the sigmoid colon, and 2 from bleeding from the distal colon. It is suggested that bolder surgery might have prevented these deaths. [This approach seems to be the correct one for those clinics specially skilled in the treatment of this disease.]

J. E. Richardson

149. **ACTH and Cortisone in the Treatment of Ulcerative Colitis.** (A.C.T.H. et cortisone dans le traitement de la rectocolite hémorragique)

J. RACHET, A. BUSSON, J. ROGÉ, and R. ROBINEAU. *Archives des Maladies de l'Appareil Digestif* [*Arch. Mal. Appar. dig.*] **40**, 1129–1138, Nov., 1951. 2 figs., 7 refs.

From Paris the authors report 8 cases of ulcerative colitis treated with cortisone and 2 with ACTH (corticotrophin). There was some subjective improvement in 3 cases, with a decrease in the number of stools, though not in their character. In none was there any change in the character of the local lesions as seen by sigmoidoscopy. Results of control laboratory tests are described, and a consistent elevation of the alkaline reserve is pointed out. The rationale of this method of treatment is discussed, together with the complications and the results in some previously reported series. [However, little is said of the effects of aureomycin or chloramphenicol, one of which was always given as well, along with the precautionary low-salt diet.] *J. David DeJong*

150. **Clinical Effects of ACTH in Ulcerative Colitis**

J. A. HALSTED, W. S. ADAMS, S. SLOAN, R. L. WALTERS, and S. H. BASSETT. *Gastroenterology* [*Gastroenterology*] **19**, 698–721, Dec., 1951. 5 figs., 9 refs.

At the Veterans Administration Centre Hospital, Los Angeles, 15 patients with ulcerative colitis were treated with corticotrophin; in 5 of them a course of cortisone was given first. The results, which are tabulated, suggest that there was a considerable subjective improvement, with gain in appetite, and that the faecal output decreased both in total amount and in the number of motions per day. The gain in weight was not particularly striking, nor were the other effects; but in those patients in whom the diarrhoea was most markedly diminished, sigmoidoscopic examination of the colon showed a decrease in the inflammatory reaction.

It should be noted that one patient had a perforated duodenal ulcer, one a coronary thrombosis, and one a haemorrhage from the colon followed by perforation of this organ. Return of the colitis occurred in the majority of patients when corticotrophin was stopped.

G. A. Smart

151. **ACTH in the Treatment of Chronic Ulcerative Colitis**

J. M. ELLIOTT, E. D. KIEFER, and L. M. HURXTHAL. *Gastroenterology* [*Gastroenterology*] **19**, 722–728, Dec., 1951. 1 fig.

In this investigation 33 cases of chronic ulcerative colitis were treated along general lines, and during this time they received courses of corticotrophin in doses up to 100 to 120 mg. per day. The most important changes were an increase in appetite and in general well-being, and a fall in temperature. In those cases of recent origin there was also some improvement in the symptoms referable to the colon, such as relief of pain and decrease in the diarrhoea.

[Without an adequately controlled investigation it is impossible to say whether even these results are connected with the corticotrophin therapy. Though the authors feel that corticotrophin can relieve symptoms and be a stimulus to the remission of the colitis, they think it has no direct curative effect upon the disease in the colon.] *G. A. Smart*

152. **Persistent or Recurrent Proximal Ileitis following Surgery**

R. COLP and D. A. DREILING. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 28–46, Jan., 1952. 5 figs., 29 refs.

A survey of the published results of surgical treatment for regional ileitis leads the authors to conclude that about 1 patient in 5 subjected to surgery—either resection or ileo-colostomy with exclusion—will eventually return with further evidence of the disease. They discuss the cause, prevention, and treatment of such recurrences on the basis of 10 personal cases seen at the Mount Sinai Hospital, New York; 5 of these had had resection and 5 ileo-colostomy with exclusion as the primary surgical treatment. In all cases the recurrence extended from the ileo-colostomy proximally, and in those treated only by exclusion the lesion in the excluded ileum had nearly always completely subsided. The authors suggest that recurrence may often be due to the presence of microscopic foci of ileitis, undetectable by palpation or naked-eye inspection, in the ileum proximal to the lesion originally excised. To minimize the risk of leaving " skip areas " of this kind they recommend that the bowel should be transected at least 60 cm. proximal to the upper limit of the gross lesion.

In the treatment of their 10 recurrences resection was avoided. Usually a further exclusion operation was carried out, the ileum being divided 60 cm. proximal to the recurrence and a side-to-side ileo-sigmoidostomy performed. The results in these cases have shown that the fear that this might result in persistent profuse diarrhoea is largely unfounded. In one case, however, a further recurrence of the disease has developed.

J. C. Goligher

GALL-BLADDER AND LIVER

153. **Transabdominal Cholangiography**

R. F. CARTER and G. M. DAYPOL. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 253–255, Jan. 26, 1952. 8 figs.

The author describes various attempts to identify radiologically the seat of the obstruction in certain cases of obstructive jaundice. At first he injected the dye directly into the hepatic ducts at operation; if this showed an atresia of the ducts his next step was to inject in the area of the hilum of the liver. When this failed

he then tried puncturing the liver itself and injecting dye if bile could be aspirated. No bleeding was encountered and the results were fairly satisfactory. In patients who were too ill for laparotomy blind puncture of the liver was carried out, with preliminary aspiration and injection of dye if bile was found. One case of this nature is reported.

[Although cholangiography performed at operation seems a rational and safe procedure, it is possible that blind puncture of the liver might lead to accidents if it were carried out too often.] *E. C. B. Butler*

154. **Transduodenal Reconstruction of the Bile Ducts**
L. R. DRAGSTEDT and E. R. WOODWARD. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 53–56, Jan., 1952. 4 figs., 5 refs.

The authors describe a method of finding the lower end of a cut common bile duct. It consists simply in opening the duodenum and passing a catheter upwards through the ampulla of Vater. End-to-end suture of the duct is recommended, as this preserves the sphincter function at the lower end of the biliary tract. The pancreas and duodenum must be fully mobilized to reduce tension on the suture to the minimum. The suture is carried out over a rubber catheter which is brought out through the duodenum, to which it is attached by a suture; omentum is wrapped round the catheter. It is the authors' practice to leave the catheter in place for at least a year; no ill effects have been seen. This method of reconstruction has been carried out on 6 patients, in 3 of them with success; 2 have only recently been treated, and one died 24 hours after operation.
J. E. Richardson

155. **The Regenerative Power of the Liver and its Reserve Capacity for Excreting Bile. Their Possible Significance in Surgical Treatment of Biliary Obstruction**
L. SCHALM, M. J. SCHULTE, H. R. BAX, M. MIETE, B. J. MANSENS, and A. R. PEREIRA. *Lancet* [*Lancet*] **1**, 75–81, Jan. 12, 1952. 13 figs., 25 refs.

The authors describe, from the Municipal Hospital, Arnhem, Holland, experiments in rabbits and pigs which demonstrated that in these animals the excretion of bilirubin from large sections of the liver may be prevented by ligation of relevant bile ducts without the development of jaundice or other ill effects, provided biliary drainage from the rest of the liver is intact and free. Injections of 40% iodized oil subsequent to biliary obstruction showed that there were no anastomoses between the biliary tracts of the occluded and the free sections of the organ. Total blood bilirubin level was not raised in rabbits or pigs following ligation of the bile ducts from part of the liver, indicating that resorption of the occluded bile did not occur. In rabbits, total obstruction to biliary flow was followed by jaundice and death. In both rabbits and pigs the portion of the liver from which the biliary flow was occluded underwent atrophy, whereas the active portion hypertrophied; in rabbits the glycogen content of the atrophied cells was unaffected. In one set of experiments in rabbits occlusion of the left hepatic duct was accompanied by simultaneous ligation of the concomitant hepatic artery and subsequent necrosis. The animals died in 10 to 12 days without increase in blood bilirubin level.

The authors review available clinical evidence in the light of their experiments, and conclude that "it is justifiable to assume that in man, also, occlusion of one branch of the hepatic duct, depriving about half the liver of its biliary drainage, is compatible with life and good health so long as the other hepatic branch has free biliary drainage". They suggest that this may have practical surgical possibilities: "(1) One branch of the hepatic duct may be cut at the hilus of the liver and used for plastic operations with the common bile duct. (2) Anastomosis with one of the hepatic ducts is a completely satisfactory operation. (3) One branch of the hepatic duct may safely be sacrificed if the operation entails it". *B. G. Maegraith*

156. **The Serum Iron Content in the Differential Diagnosis of Jaundice.** (Das Serumeisen in der Differentialdiagnose des Icterus)
P. DUBS. *Schweizerische Medizinische Wochenschrift* [*Schweiz. med. Wschr.*] **82**, 73–76, Jan. 26, 1952. 13 refs.

The serum iron concentration may be used to distinguish between hepatitis and obstructive jaundice. In hepatitis the concentration of iron is above normal (that is, more than 120 μg. per 100 ml.), and in obstructive jaundice either normal (about 90 to 100 μg. of iron per 100 ml.) or below normal. The diagnostic value of the serum iron level was compared with that of other tests as carried out on 63 patients with jaundice. The serum iron level correctly distinguished between hepatitis and obstructive jaundice in 91% of cases, the galactose test in 75%, the prothrombin level in 60%, the Weltmann test in 65%, and the serum levels of total cholesterol in 65%, of cholesterol esters in 67%, and of alkaline phosphatase in 69%. *J. E. Page*

157. **Plasma Volume, Total Circulating Protein, and Oedema in Alcoholic Cirrhosis.** (Volume plasmatique, protéines totales circulantes et syndrome œdémateux des cirrhoses alcooliques)
R. CACHERA, F. DARNIS, G. LEPERCQ, and M. L. DELORME. *Presse Médicale* [*Pr. méd.*] **59**, 1660–1664, Dec. 12, 1951. 12 figs., 23 refs.

The authors studied 28 cases of alcoholic cirrhosis at the Hôpital Bichat, Paris; 91 estimations of the volume of circulating plasma were made, by methods using either polyvinylpyrrolidone or the blue dye T–1824. In one case the plasma volume was normal, in 3 it was decreased, and in the remaining 24 it was significantly increased. This increase in plasma volume was observed in cases with and without ascites. There was no correlation between the plasma volume and the concentration of total plasma protein and albumin, but a linear relationship was established between the plasma volume and the total amount of circulating protein. This last figure was raised in 21 cases, normal in 4, and decreased in the remaining cases, whereas the amount of circulating albumin was decreased in 20 cases, normal in 4, and increased in 4. The authors conclude that there was no

direct correlation between the plasma volume or plasma protein concentration and the presence or absence of oedema. *M. J. H. Smith*

158. **A Study of Serum Electrolytes (Na, K, Ca, P) in Patients with Severely Decompensated Portal Cirrhosis of the Liver**
D. S. AMATUZIO, F. STUTZMAN, N. SHRIFTER, and S. NESBITT. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **39**, 26–29, Jan., 1952. 18 refs.

Serum electrolytes (Na, K, Ca, P) have been studied in 15 alcoholic patients with severely decompensated portal cirrhosis who presented the picture of impending hepatic coma. All electrolytes were found to be abnormally low in each instance before treatment.

The present study indicates that the low serum electrolytes are primarily related to a dietary deficiency. Other mechanisms, such as a disturbed renal control of electrolytes and steatorrhea, should also be considered. Correction of this electrolyte depletion, as of other deficiencies, is of importance in the proper treatment of these cases.—[Authors' summary.]

159. **Hepatic Circulation in Cirrhosis of the Liver**
S. E. BRADLEY, F. J. INGELFINGER, and G. P. BRADLEY. *Circulation* [*Circulation*] **5**, 419–429, March, 1952. 17 refs.

The estimated hepatic blood flow was determined by the bromsulphalein clearance test in 91 normal controls and in 39 patients suffering from hepatic cirrhosis, including 4 with Banti's syndrome. The word " estimated " is used deliberately, because in cirrhosis there is escape of blood by collateral vessels in the splanchnic area. The mean rate of flow in the controls was 1,530 ml. per minute, whereas in the patients with cirrhosis it was 1,090 ml., a significant reduction.

Oxygen consumption in the liver was not altered, but the actual rate of perfusion of blood through a cirrhotic organ appeared to be slowed. It is of interest to note here the fact that, as Smythe *et al.* have shown (*J. clin. Invest.*, 1951, **30**, 674), the portal venous blood still contains ample oxygen even after its passage through the capillary bed of the intestinal wall. *J. W. McNee*

PANCREAS

160. **Metabolic Effects of Total Pancreatectomy in Man**
A. G. W. WHITFIELD, A. GOUREVITCH, and G. THOMAS. *Lancet* [*Lancet*] **1**, 180–183, Jan. 26, 1952. 15 refs.

It is stated that only in 10 of the 25 previously recorded cases of successful total pancreatectomy has the patient survived long enough to allow adequate study. In the present paper are presented post-operative details of a patient who has survived total pancreatectomy for over 2 years.

The fat absorption was 38% when the patient was receiving small doses of pancreatin (1·5 g. daily), but it increased to 83% when large doses were given (11·5 g. daily); pancreatin also decreased the bulk and improved the consistency of the stools. The records of previous cases, with one exception, confirm the authors' finding that the gross defect in fat absorption due to loss of external pancreatic secretion is greatly reduced by large doses of pancreatin. The protein absorption in the present case, however, was not improved by pancreatin, as evidenced by study of the nitrogen balance, whereas in some of the recorded cases a diminution in faecal nitrogen loss and an improved nitrogen balance were secured by the administration of pancreatin. The most striking feature of the case (and of other recorded cases) is the small amount of insulin (approximately 50 units daily, and often substantially less) required to control the diabetes, despite a high carbohydrate intake; although the insulin sensitivity of depancreatized patients has been stressed by other authors, in this case the patient has had only mild hypoglycaemic reactions occasionally. Haematological study showed a slight macrocytic anaemia.

While defective absorption may well be an important reason why patients who have undergone total pancreatectomy need so little insulin, the finding would appear to lend support to the current view that islet-cell deficiency is not wholly responsible for diabetes.
Joseph Parness

161. **Pancreaticoduodenectomy with Resection of the Portal Vein in the *Macaca mulatta* Monkey and in Man**
C. G. CHILD, G. R. HOLSWADE, R. D. MCCLURE, A. L. GORE, and E. A. O'NEILL. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 31–45, Jan., 1952. 13 figs., 27 refs.

The present treatment of carcinoma of the pancreas is highly unsatisfactory; the average survival period following palliative procedures in a series of 1,000 cases was only 5 months, and in a small group undergoing resection it was 10 months (excluding one patient who survived nearly 5 years).

The close relationship of the portal vein and its lymphatics to a neoplasm of the pancreas suggested to the authors that the results might be improved by resection of this structure *en bloc* with the pancreas and duodenum. Experiments were designed to test this theory and were performed on the *Macaca mulatta* monkey. It was found that this animal can stand sudden occlusion of the portal vein, but that resection of the pancreas should be deferred until a collateral circulation has developed and the portal pressure has fallen. The portal vein was also ligated in 4 human subjects with inoperable carcinoma. No ill effects followed.

In patients with neoplasm of the pancreas the growth may have occluded the portal vein; in this case, a one-stage resection is justifiable, If there has been no occlusion the two-stage method is better, as it allows time for the collaterals to open and so diminishes the bleeding during the resection. The decision as to which form of operation to adopt rests on the portal pressure after trial ligation of the portal vein. If there is no significant rise, a one-stage procedure is indicated; if the pressure rises to 30 cm. of saline, a two-stage operation should be performed. *J. E. Richardson*

Cardiovascular System

HEART

162. **Stab Wounds of the Heart and Pericardium Producing Acute Cardiac Tamponade Treated by Aspiration of the Pericardium ; Report of Cases**
C. V. MENENDEZ. *American Surgeon* [*Amer. Surg.*] **18**, 66–77, Jan., 1952. 4 figs., 31 refs.

The author, from the Charity Hospital of Louisiana, New Orleans, discusses the treatment of the tamponade which follows stab wounds of the heart and which is largely responsible for death from wounds of this type. He reviews the literature, and notes a tendency towards conservatism (aspiration rather than exploration) in recent years. He describes in detail 4 patients of his own who sustained this injury, and discusses the various approaches for aspiration of the pericardium. He stresses the importance of paradoxical pulse in diagnosis and the immediate improvement which follows aspiration.

He points out, finally, that there are two types of heart wound—one which causes massive haemorrhage and which is immediately fatal, and the other causing varying degrees of tamponade which can be treated adequately by aspiration (repeated if necessary)—and considers that in the absence of any other indication for thoracotomy exploration is not necessary. *J. R. Belcher*

163. **Epicardial Electrocardiograms Recorded in the Course of Seven Cases of Heart Surgery**
G. J. CAROUSO, H. A. CHEVALIER, I. LATSCHA, and J. LENÈGRE. *Circulation* [*Circulation*] **5**, 48–57, Jan., 1952. 7 figs., 7 refs.

Tracings from direct epicardial leads were obtained at operation on patients with congenital heart disease—4 with right ventricular hypertrophy, 2 with left ventricular hypertrophy, and one without ventricular hypertrophy. In the cases with right ventricular hypertrophy the QRS complex from right ventricular epicardial leads consisted of an R, Rs, RS, or rS pattern, depending on the area explored, while the QRS in left ventricular epicardial leads showed a qRs or qRS pattern. The ventricular activation time was prolonged over the right ventricle as well as over the left ventricle. There was good correlation between the right-sided precordial and right ventricular epicardial lead patterns, but no correlation between those over the left ventricular epicardium and the left precordial leads. In left ventricular hypertrophy the right ventricular epicardial lead tracings were characterized by an rS or RS pattern, without delay in ventricular activation time, and a qRS or qR pattern in left ventricular epicardial tracings. There was thus a discrepancy, in cases of right ventricular hypertrophy, between the deep S wave in left-sided precordial leads and the qRS pattern in epicardial leads over the left ventricle. This is attributed to dominance by the thickened right ventricle of the electrical field surrounding the heart, the dominant vector being represented in leads overlying the left ventricle by oppositely directed, mainly negative, deflections.

[This paper is a valuable contribution to the understanding of the cardiographic pattern in ventricular hypertrophy in congenital heart disease. It is unfortunate that further details are not given of Case 5 (pulmonary atresia—? left ventricular hypertrophy), in which the interpretation and statements in the text are not wholly consistent with the tracings shown.] *J. F. Goodwin*

164. **Acute Endocarditis as a Complication in Bacterial Pneumonia**
E. APPELBAUM, M. S. BRUNO, and E. HOCHSTEIN. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 93–98, Jan. 12, 1952. 10 refs.

In this paper 4 cases of bacterial endocarditis complicating pneumonia are described from New York. In 3 the causal organism was a pneumococcus, and in the fourth *Staphylococcus aureus*. One patient had pre-existing rheumatic heart disease. In all 4 patients aortic regurgitation developed and all 4 cases were fatal. It is stressed that if treatment is to be more successful the condition must be suspected and diagnosed with as little delay as possible, and treated energetically with full doses of penicillin for at least 6 weeks. *C. Bruce Perry*

165. **Treatment of Subacute Bacterial Endocarditis with Aureomycin**
C. K. FRIEDBERG. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 98–103, Jan. 12, 1952. 3 figs., 14 refs.

At the Mount Sinai Hospital, New York, 11 patients with subacute bacterial endocarditis were treated with aureomycin, 4 to 6 g. daily being given 6-hourly by mouth. In 6 of the patients the causal organism was *Streptococcus viridans* and in 2 *Strep. faecalis*; no organism was isolated from 3 of the patients.

Aureomycin effected a cure in 2 of the cases due to *Strep. viridans* and in 2 of the 3 patients with negative blood cultures. Of the 6 patients with positive blood cultures who failed to respond to aureomycin 5 were subsequently cured with penicillin or a combination of antibiotics. In most of the cases administration of aureomycin was followed by clinical improvement, abolition of fever, and negative blood cultures, but the disease relapsed shortly after treatment was stopped.

This study supports the view that the action of aureomycin is mainly bacteriostatic as opposed to the bactericidal action of penicillin. It is concluded that aureomycin should not be used as a routine for the treatment of subacute bacterial endocarditis, but that its use, alone or combined with other antibiotics, is indicated in cases failing to respond to penicillin or infected with organisms resistant to penicillin. *C. Bruce Perry*

166. **Clinical Signs of Descending Myocarditis in Syphilitic Aortitis.** (Aortitis sifilitica. Clínica de la miocarditis descendente)

R. CARRAL and M. ORIZAGA. *Archivos del Instituto de Cardiología de México* [*Arch. Inst. cardiol. Méx.*] **21**, 435–456, 1951. 4 figs., 13 refs.

Amongst 761 necropsies performed between 1944 and March, 1950, at the Instituto Nacional de Cardiologia, Mexico, there were 746 cases of cardiovascular disease in 100 of which (13·4%) aortic syphilis was present (80 males, 20 females, mean age 43·5 years). A history of primary syphilis had been obtained in 58%, of secondary syphilis in 9%, and of both in 58% of 66 uncomplicated cases, serological reactions had been positive in 95%, and antisyphilitic treatment had been absent or inadequate in 93·6%. The average interval between infection and cardiovascular symptoms was 29·3 years. From the onset of symptoms the average duration of life was 4·5 years, irrespective of the presence or absence of aneurysm; about one-half died within the first 2 years.

The occurrence of descending myocarditis was especially studied; this was found in 21 cases, amongst which the electrocardiographic signs of incomplete left bundle-branch block, as described by Friedland *et al.* (*Arch. Inst. cardiol. Mex.*, 1949, **19**, 341), were found four times as often as in those without myocarditis. The clinical diagnosis of descending myocarditis may be made tentatively on the following grounds: paroxysmal dyspnoea as the initial clinical sign; cardiac failure refractory to treatment in the absence of aortic regurgitation or coronary disease; and incomplete left bundle-branch block, particularly in cases without aortic regurgitation. Descending myocarditis had no influence on the duration of life, and in cases of syphilitic aortitis was found capable of producing cardiac failure in the absence of aortic regurgitation or coronary involvement.

[The criteria cited for the diagnosis of incomplete left bundle-branch block are not universally accepted as pathognomonic; those interested in this subject may wish to consult Sodi-Pallares *et al.* (*Amer. Heart J.*, 1950, **40**, 655; *Abstracts of World Medicine*, 1951, **9**, 500). Electrocardiographic data were available in only 14 of the cases with, and 30 without, myocarditis.]

A. Schott

167. **The Distribution of Body Fluids in Congestive Heart Failure—IV. Exchanges in Patients, Refractory to Mercurial Diuretics, Treated with Sodium and Potassium**

J. R. ELKINTON, R. D. SQUIRES, and L. W. BLUEMLE. *Circulation* [*Circulation*] **5**, 58–73, Jan., 1952. 6 figs., 26 refs.

Electrolyte balance studies were made in 13 oedematous patients who were refractory to mercurial diuretics, and most of whom had hyponatraemia; 9 were given hypertonic solutions of sodium during water restriction, 3 were given hypertonic sodium and potassium solutions, and 2 were given potassium salts only.

Treatment with hypertonic sodium solution produced thirst which, if the serum sodium level was reduced, in most cases prevented restoration to normal. Diuresis was produced in some patients during the period of administration; in others a subsequent diuresis with mercurials was obtained. (Six patients died within a week of treatment.) Diuresis after administration of potassium was seen on a single occasion only.

A fall in the serum sodium concentration frequently occurred when sodium balance was zero or positive in control periods, indicating that retention of water was the primary change. An increase in extracellular fluid occurred during hypertonic-saline infusion, sometimes at the expense of the intracellular fluid, for total body water might be unchanged, decreased, or increased. Potassium was retained in the intracellular phase whenever it was given, but there was no reciprocal change in intracellular sodium. Alkalosis, when present, appeared to be due to a relatively high excretion of chloride compared with sodium excretion during diuresis.

It is suggested that retention of water rather than sodium depletion may be the more fundamental change in this group of patients, and that this in turn may be secondary to changes in the intracellular fluid.

J. W. Litchfield

168. **The Effects of the Valsalva-like Maneuver upon the Circulation in Normal Individuals and Patients with Mitral Stenosis**

H. GOLDBERG, E. I. ELISBERG, and L. N. KATZ. *Circulation* [*Circulation*] **5**, 38–47, Jan., 1952. 4 figs., 18 refs.

The effects on the circulation produced by blowing into a mercury manometer for as long as possible were studied in 3 normal subjects, 3 patients with mild mitral stenosis, and 4 patients with severe mitral stenosis. An average intra-oral pressure of 50 to 55 mm. Hg was attained.

The initial effect in the normal and mild cases was a parallel rise in systolic and diastolic blood pressures which took place within 4 heart beats (Phase I). As the strain was maintained, there was a gradual fall in the systolic and, to a less extent, in the diastolic pressure, and thus in pulse pressure, and the beginning of tachycardia (Phase 2). Cessation of straining caused an immediate fall in systolic and diastolic pressures to below the control level, with further increase in heart rate (Phase 3). Finally, systolic, diastolic, and pulse pressures rose to the control level (within 5 to 8 beats), and then above it, and the pulse rate fell below the control level (Phase 4). Changes in the form of the pulse contour were also observed.

In patients with severe mitral stenosis the fall in pulse pressure and the presence of tachycardia in Phase 2 were much less marked, and " overshooting " of the blood pressure with bradycardia did not occur in Phase 4. Patients in all groups showed a rise in systolic and diastolic pressures in the pulmonary artery in Phase 1, a slight fall towards control levels in Phase 2 with fall in pulse pressure, hypotension with a rise in pulse pressure during Phase 3, and a slight overshoot in Phase 4.

Phase 1 is due to expulsion of blood from the pulmonary circulation into the left ventricle as intrapleural pressure rises (the latter is 7 or 8 mm. Hg less than the intra-oral pressure). During Phase 2 the venous return is obstructed, while in Phase 4 the overfilled venous

reservoir discharges with increased cardiac output, overshoot in blood pressure, and reflex bradycardia. In severe mitral stenosis the overshoot and bradycardia do not occur, as the stenosed mitral valve slows down the escape of blood into the left ventricle, and the original distribution of the blood is restored much more gradually. It is suggested that this procedure may provide a simple bedside index of the degree of mitral stenosis. *J. W. Litchfield*

169. **Continuous Administration of Anticoagulants in the Prophylaxis of Embolism in Mitral Stenosis.** (Rétrécissements mitraux emboligènes et médication anticoagulante continue)
J. Facquet, A. Husson, and H. Ducrot. *Presse Médicale* [*Pr. méd.*] **60**, 116–117, Jan. 26, 1952. 10 refs.

Patients with mitral stenosis and auricular fibrillation in whom systemic embolism occurs are frequently those with little previous incapacity; moreover, since one embolus is likely to be followed by others, any effective method of prophylaxis would be particularly valuable. The case is described of a woman aged 51 who suffered a succession of emboli involving the kidney, brain, and aortic bifurcation. During the last episode; " tromexan " (ethyl biscoumacetate) therapy was instituted and has been continued for 2½ years without ill-effect and with no recurrence of embolism. In 2 other patients tromexan was started within a few days of the onset of hemiparesis attributed to cerebral embolism, and has now been continued for 1 year and 18 months respectively; no further embolism has occurred in either case. Treatment is controlled by the heparin tolerance test, an adequate diminution in blood coagulability being attained when the prothrombin level is between 10% and 30% of normal. The maintenance dose of tromexan has varied from 75 mg. to 300 mg. daily. *H. McC. Giles*

170. **Double Aortic Arch (with Report of a Case with a Rare Type of Functioning Double Arch Consisting of a Slightly Larger Anterior Right Arch, Smaller Posterior Left Arch, Right Descending Aorta and Left Ligamentum Arteriosum)**
C. F. Storey and J. W. Crittenden. *Diseases of the Chest* [*Dis. Chest*] **20**, 611–629, Dec., 1951. 7 figs., 28 refs.

The authors describe a case, admitted to the U.S. Naval Hospital, St. Albans, Long Island, New York, of a rare type of double aortic arch, of which only 51 cases have hitherto been reported. The aetiology is discussed and the literature is fully reviewed. The present authors believe their patient to be the youngest so far to undergo surgery for a constricting vascular ring formed by a double aortic arch.

The patient was an infant who, immediately after birth, presented these characteristic features: marked inspiratory and expiratory stridor, aggravated during feeding; excessive mucous secretion; and intermittent cyanosis. Bronchoscopic findings were: compression and forward displacement of the posterior membranous tracheal wall above the main carina; and indentation of both lateral tracheal walls, causing a triangular-shaped lumen. Radiographic and radioscopic examination with heavy barium swallow showed indentation of the oesophagus with forward displacement and narrowing from both sides, and two aortic knuckles.

Three months after birth a left thoracotomy was performed under endotracheal ether anaesthesia. At operation a double aortic arch, consisting of a slightly larger anterior right arch and a smaller left arch passing posterior to the oesophagus to join the proximal part of a right descending aorta, and a left ligamentum arteriosum were found. The latter was in the hemithorax opposite that occupied by the proximal descending aorta, which is unusual; also, in most cases the larger arch passes behind the oesophagus and descends in the opposite chest. After division of the ligamentum arteriosum the proximal portion of the left aortic arch was divided and closed. The ligated distal end moved to the left, upwards, and backwards. This fully released the tight vascular ring around trachea and oesophagus.

The following complications led to the death of the infant on the 48th post-operative day: laryngeal oedema necessitating an unsatisfactory emergency tracheotomy, paresis of the left vocal cord from traction on the left recurrent nerve, left pulmonary atelectasis, terminal bronchiolitis, pericardial effusion, and respiratory failure. Necropsy confirmed the operative findings and the successful relief of the obstruction. In addition there was marked dilatation of the right atrium, both venae cavae, and the azygos vein.

The authors emphasize: (1) the rarity of other cardiovascular abnormalities associated with double aortic arch; (2) the importance of careful pre-operative diagnosis and post-operative management; (3) surgical intervention as the only cure in cases with severe symptoms; and (4) the ability of most young infants to withstand major intrathoracic procedures. *J. Wolf*

171. **A Haemodynamic Study of Ten Cases of Patent Ductus Arteriosus.** (Étude hémodynamique de 10 observations de persistance isolée du canal artériel)
G. Voci, M. Touche, and F. Joly. *Archives des Maladies du Cœur et des Vaisseaux* [*Arch. Mal. Cœur*] **44**, 1103–1118, Dec., 1951. 4 figs., 23 refs.

In this study from the Lariboisière Hospital, Paris, 10 patients, aged 4 to 28 years, with undoubted patent ductus arteriosus were investigated by cardiac catheterization, the pressures being recorded with an electromanometer. The diagnosis was confirmed in 8 cases by finding a higher blood oxygen content in the pulmonary artery than in the right ventricle; in 5 cases it was possible to pass the catheter through the patent ductus. The pressure in the pulmonary artery was found raised to between 35 and 60 mm. Hg in 6 cases. Exact determination of the pulmonary blood flow was found to be difficult since there was considerable variation in the oxygen content of different specimens of blood taken from the pulmonary artery. The importance of taking several specimens is stressed. In 5 cases the pulmonary blood flow was double, and in one case treble, the peripheral flow.

Pulmonary hypertension may be partly due to the increased pulmonary blood flow, but increased pulmonary resistance with organic arteriolar changes may be an important factor, since pressure in the pulmonary artery does not fall to normal directly after ligation of the duct. The aorto-pulmonary shunt was found to be between 21 and 64% of the output of the left ventricle. The slightly lowered peripheral arterial oxygen content in 6 cases was thought to be due to incomplete oxygenation in the lungs.

Keith Ball

CORONARY DISEASE

172. **Chest Pain in Association with Pulmonary Hypertension. Its Similarity to the Pain of Coronary Disease**
W. N. VIAR and T. R. HARRISON. *Circulation* [*Circulation*] **5**, 1–11, Jan., 1952. 3 figs., 21 refs.

The authors describe 6 cases in which the patient had chest pain which might have been attributed to coronary disease. The aetiological diagnoses were: atrial septal defect, chronic cor pulmonale (3 cases), massive pulmonary embolism, and mitral valve disease. Necropsy in 3 of the cases showed no evidence of coronary disease. Although the pulmonary arterial pressure was not measured in any of the cases and there was no other factual support, the pain was attributed to distension of the pulmonary artery secondary to pulmonary hypertension.

Paul Wood

173. **Operation for Coronary Artery Disease**
C. S. BECK, R. S. HAHN, D. S. LEIGHNINGER, and F. F. MCALLISTER. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **147**, 1726–1731, Dec. 29, 1951. 9 figs.

Between 1932 and 1942 the authors, with others, were working out a method of mitigating the effect of tying the descending branch of the left coronary artery in dogs. Following the ligation 70% of a group of normal dogs died, and after death a definite cardiac infarct was found. In 37 dogs a vein graft was used to direct arterial blood from the aorta into the coronary sinus, the latter being either completely or partially ligated at its opening into the right atrium. Of this group only 4 died after ligation of the test artery. It happened that the vein graft of 10 dogs became obliterated by thrombosis, and only 3 of these animals survived. When a vein graft was functioning the infarcted area was found to be either smaller than in the control animals or absent.

In some dogs with a vein graft the circumflex artery was dissected out and severed. The blood flow through the distal end was venous and large in amount. When the graft was occluded the flow became arterial but small in amount. These observations seem to imply that when the vein graft is functioning it permits arterial blood to flow from the aorta to the coronary sinus and through the myocardium in a retrograde fashion, so that it returns to the right side of the heart either by veins which open directly into the right atrium or by Thebesian veins, though if the coronary arterial pressure is low the deoxygenated blood may pass on into a coronary artery.

The results encouraged a belief that in cases of coronary artery disease an alternative arterial blood supply to the myocardium might be achieved via the coronary sinus. Accordingly a graft taken from the jugular or an arm vein was sutured between the aorta and the coronary sinus. This produced an arterio-venous fistula so that arterial blood could be seen in the coronary veins and a thrill felt over the graft. When this had been done ligatures of " orlon " (polyacrylonitrile fibre) were placed round the coronary sinus at the point where it entered the right atrium. These sutures were not tightened until a second operation, which took place 3 weeks after the first. At this operation a probe 2 mm. in diameter was placed on the sinus and the threads tightened on this. When the probe was withdrawn a partial occlusion of the sinus resulted.

When a similar operation was performed on 12 patients severely affected by coronary disease 8 of them died. It was suggested that the myocardial damage in these patients had been too extensive for a successful result to be expected or for them to withstand operation. A group of 19 less severely affected patients was then operated upon, and of these only one died.

In the present account case reports of 28 patients are given; 23 of these recovered and 5 died—a mortality rate of 18%. The results in the surviving cases " appear to be, or actually are, favourable ". It is considered that the operation has not yet been completely developed—particularly the problem of preventing thrombosis.

[The clinical details of the patients treated, as they are given, are too meagre to enable the reader to form any idea of what type of case was operated upon or whether the post-operative improvement was more than might be expected to occur spontaneously. In any future account of this work it is hoped that the clinical reports will correspond to the importance of the subject.]

H. E. Holling

174. **An Electrocardiographic and Morphologic Study of Changes following Ligation of the Left Coronary Artery in Human Beings: a Report of Two Cases**
G. K. GRAHAM and E. G. LAFORET. *American Heart Journal* [*Amer. Heart J.*] **43**, 42–52, Jan., 1952. 6 figs., 32 refs.

The authors report 2 cases in which haemorrhage from the auricle during mitral valvulotomy necessitated ligation of the left main coronary artery or its branches. Both patients died subsequently, so that the electrocardiographic changes during and immediately after ligation could be correlated with necropsy evidence of myocardial infarction. In the first case, 5 minutes 10 seconds after ligation the T wave in Lead II became peaked; 30 seconds later elevation of the S–T segment appeared, and 7 minutes after ligation a monophasic deflection was recorded, immediately followed by the onset of ventricular fibrillation. No Q waves were seen. At necropsy the apical region of the heart appeared softened and the myocardium of the left ventricle showed microscopic evidence of recent infarction. The second patient survived ligation, but died 36 hours later following a hemiplegia. The electrocardiogram showed transient

depression of the S–T segment in Leads II and III, with elevation in Leads aVL and aVR, starting 5 minutes after coronary ligation. Marked regression was seen 13 minutes later, and 4 hours later the electrocardiogram had returned to the pre-operative pattern. Necropsy revealed changes consistent with infarction of the anterior wall of the left ventricle of 36 hours' duration.

The authors consider that the findings are consistent with the hypothesis that the greatest initial effect of the ischaemia produced by coronary occlusion is on the sub-endocardial muscle, resulting almost immediately in augmentation of the T wave and later in S–T abnormalities. The development of a monophasic QRS complex immediately before the onset of ventricular fibrillation indicates that acute ischaemia of the myocardium is followed by ventricular irritability. Reversal of the electrocardiographic changes in the second case may have been associated with the improvement in systemic blood pressure and coronary flow which followed valvulotomy. *J. F. Goodwin*

BLOOD VESSELS

175. **The Motor Innervation of the Blood Vessels.** (Innervation efférente des vaisseaux sanguins)
V. JABONERO. *Cardiologia* [*Cardiologia, Basel*] **19**, 209–247, 1951. 5 figs., bibliography.

The author reviews his own work and that of others on the innervation of blood vessels. Whereas the arteries and veins possess an intrinsic nerve plexus situated in the adventitia, the arterioles, venules, and capillaries are surrounded by anastomosing protoplasmic nerve fibres (interstitial cells) which do not come into intimate contact with the vessels and have no free nerve endings. It is suggested that a number of small blood vessels are simultaneously affected by the diffusion of adrenaline. No clear structural basis can be found for the differences in behaviour of the sympathetic and parasympathetic systems, and it is suggested that these differences are due to variations in the quantity and duration of action of adrenaline released. *R. Barer*

176. **The Portacaval Venous Shunt. With Special Reference to Side-to-side Portacaval Anastomosis**
A. LARGE, C. G. JOHNSTON, and D. E. PRESHAW. *Annals of Surgery* [*Ann. Surg.*] **135**, 22–33, Jan., 1952. 8 figs., 29 refs.

It was shown experimentally in dogs that a side-to-side anastomosis of the portal vein and the inferior vena cava gave rise to less interference with liver function than complete diversion of the portal blood by an end-to-side anastomosis. It was therefore assumed that a side-to-side anastomosis, or sometimes an end-to-side lienorenal anastomosis, would be preferable in the treatment of portal hypertension in the human being. With the help of a new clamp (resembling the Potts clamp) on the inferior vena cava, side-to-side portacaval anastomosis was performed. Anticoagulants were not used.

Among 18 patients operated upon there were 2 post-operative deaths. Where the operation was performed for bleeding oesophageal varices without ascites (12 cases), all the results were good and 9 of them were excellent. If the operation was performed for ascites the results were only fair, and it is suggested that if ascites and haemorrhage are both present the operation is not indicated. The authors consider that if liver function is adequate (as indicated by a serum albumin level of over 3 g. per 100 ml., bromsulphalein retention of under 15% in 45 minutes, and prothrombin concentration of more than 60% of normal), the side-to-side portacaval shunt as described by them is a relatively safe procedure.
Peter Martin

ARTERIES

177. **Communications between the Carotid Artery and Cavernous Sinus. A Clinical and Critical Study of their Complications and Treatment**
E. HOLMAN, F. GERBODE, and V. RICHARDS. *Angiology* [*Angiology*] **2**, 311–339, Oct., 1951. 18 figs., 23 refs.

The authors describe, from the Stanford University Medical School, San Francisco, 13 cases of carotid–cavernous fistula. In 11 patients the aetiology was undoubtedly traumatic, in one it was possibly so, and in another patient the fistula developed spontaneously. In 11 of the cases pulsating exophthalmos was present, and the serious effects of the lesion upon vision are stressed. Thus it has been reported that blindness with optic atrophy and cataract formation occurs in the affected eye in 35% of cases, and reduction of vision to one-tenth in another 20%; glaucoma is not infrequently a sequel, and ocular palsies may contribute to the visual deterioration.

In treatment the authors advise a preliminary period of digital compression of the common carotid artery. This may lead to thrombosis in the fistula and result in spontaneous cure; it further assists in the development of a collateral circulation when carotid ligation is necessary. Where surgery is indicated, ligation of the common carotid artery is recommended as a first step, and subsequently, if necessary, the internal carotid artery is tied. The authors further recommend that the internal jugular vein be ligated proximal to the point at which the common facial vein enters it. They hold [though they adduce no conclusive evidence for the belief] that this procedure will promote venous stasis in the sinus and thus encourage thrombosis in the fistula, and further that it will aid in preventing the diversion of blood from the collateral arterial circulation into the fistula. When the fistula persists after carotid ligation in the neck, intracranial clipping of the internal carotid artery is indicated, and this was carried out in 5 of the patients with a satisfactory result in 4, the fifth patient being already *in extremis* following ligation of both internal carotid arteries at intervals of 2 years. In one case division of the three carotid arteries on one side was not enough to prevent blood flowing through the fistula until ligation of small arteries in the supra- and infra-orbital regions had been carried out; no intracranial clipping of the internal carotid artery had been performed here. It is emphasized that if at all possible bilateral ligation of the

carotids should be avoided; of 3 patients in whom it was necessary, one died and one showed transient mental changes—possibly due to other causes.

J. E. A. O'Connell

178. **The Use of Preserved Infant's Aorta in the Treatment of a Popliteal Aneurysm**

P. MARTIN and R. B. LYNN. *British Journal of Surgery* [*Brit. J. Surg.*] 352–355, Jan., 1952. 6 figs., 22 refs.

The authors refer to the desirability of treating aneurysms by excising the sac and restoring a pulsatile flow of blood through the main vessel, and to the methods of vein grafting which have been used for this purpose. They suggest that a graft of preserved infant's aorta is valuable in these circumstances and describe a case of syphilitic popliteal aneurysm in which such a graft was successfully used. The advantages of infant's aorta are that it is tough, elastic, and readily sutured. Owing to its relative thinness it may possibly be well enough nourished as a graft to prevent the medial necrosis which occurs in thicker arterial grafts. Moreover, stillborn infant's aorta is not unduly difficult to obtain and its antigenic properties may be less important than those of adult vessels.

In the case described lumbar sympathectomy was carried out a month before excision of the aneurysm. The aneurysmal sac was excised together with a segment of the popliteal vein adherent to it, and the 10-cm. gap was bridged with preserved 4-day-old infant's aorta. Heparin administration was started 4 hours after operation. The dorsalis pedis pulse, previously absent, returned and remained of good volume. Arteriograms before, and 10 days after, operation are reproduced and show the graft to be patent. *C. J. Longland*

179. **Regional Heparinization after Thromboendarterectomy in the Treatment of Obliterative Arterial Disease. A Preliminary Report Based on Twelve Cases**

N. E. FREEMAN and R. S. GILFILLAN. *Surgery* [*Surgery*] **31**, 115–131, Jan., 1952. 10 figs., 12 refs.

After operative procedures on arteries anticoagulants are indicated for a short period. Heparin given systemically gives rise to serious complications, sometimes even fatal, from extensive haematomata with the risk of sepsis therein. At the Franklin Hospital, San Francisco, the use of heparin locally has been tried following endarterectomy of thrombosed peripheral vessels. In this paper the technique of endarterectomy is described; the authors prefer a longitudinal incision, the circulation being controlled by proximal and distal clamps. After the "sequestrum" consisting of thrombus and intima has been removed, the interior of the artery remaining is washed out with a solution of 50 mg. heparin in 250 ml. of saline and the wound in the artery is stitched with a continuous suture of braided silk. A fine polyethylene tube is then introduced within the lumen of a needle inserted into the vessel proximal to the operation site, and through this is run a solution of 10 mg. of heparin in 100 ml. of saline at such a rate as to achieve a systemic clotting time of about 20 minutes. After 10 to 12 days the polyethylene tubing, previously led through a stab wound in the skin, is withdrawn.

The authors have carried out this operation in 12 cases with success in 6 cases, the circulation through the operated segment of artery being adequate and the vessel remaining patent. *Peter Martin*

180. **Motor Innervation of Large Arteries, with Particular Reference to the Lower Limb**

J. B. KINMONTH and F. A. SIMEONE. *British Journal of Surgery* [*Brit. J. Surg.*] **39**, 333–335, Jan., 1952. 3 figs., 1 ref.

In a previous study the authors had been unable to find evidence of motor control of the large arteries of the trunk or of the upper part of the femoral artery in animals by the use of electrical stimulation of the sympathetic supply or of the arteries themselves. Such stimulation of the sympathetic supply had, however, caused contraction of the vessels in the paw. Working at St. Thomas's Hospital, London, and the Massachusetts General Hospital, Boston, they performed experiments designed to determine the level in the arterial tree of the lower limb at which the artery can first be made to contract by electrical stimulation of the lumbar sympathetic trunk, by direct electrical stimulation of the artery, and by the intravenous injection of adrenaline. Response to these agents would be regarded as evidence of the presence of motor innervation at the level of the response. In rabbits this level was found to be at the junction of the upper and middle thirds of the femoral artery. The authors therefore suggest that motor nervous control of the femoral artery in the rabbit starts at a relatively well-defined level one-third of the way down the thigh. At operation in man no contraction of the upper third of the femoral artery has been observed in response to stimulation.

These observations have a bearing on the treatment of traumatic spasm; attempts at relief by sympathetic interruption are likely to fail, since not only may traumatic spasm occur in vessels which cannot be made to contract by nervous stimulation, but also the response to nervous stimulation differs from that to trauma in that the contraction passes off rapidly with the former, but may persist for hours with the latter.

[The original paper should be consulted for details of the experiments.] *C. J. Longland*

181. **Experimental Studies on Reversal of the Circulation in the Lower Extremity**

T. H. PALMER and C. S. WELCH. *Surgery, Gynecology and Obstetrics* [*Surg. Obstet. Gynec.*] **94**, 206–214, Feb., 1952. 5 figs., 24 refs.

The experiments described were designed to test the possibility of maintaining the nutrition of a limb when the arterial stream is diverted into the veins in an attempt to reverse the circulation. The femoral vessels in 48 dogs were divided and the proximal cut end of the artery was anastomosed by suture to the distal cut end of the vein. The animals were treated in four ways: (1) in 14 the transposition was completed by anastomosis

of the proximal cut end of the vein to the distal cut end of the artery; (2) in 28 the proximal end of the vein and the distal end of the artery were tied; (3) in 3 the limb was transected to interrupt all collateral vessels at the level of the anastomosis and re-implanted, a complete transposition of the femoral vessels being carried out; and (4) in 3 a similar transection–re-implantation was performed, but only the proximal end of the artery and the distal end of the vein were joined; the distal end of the artery was ligated, and the proximal end of the vein was ligated distal to the entry of the saphenous vein. Some of the animals were given heparin for 5 days after operation.

The dogs in Groups 1 and 2 behaved in the same way. The limb swelled steadily and death occurred in many (27%) 18 to 58 hours after operation as a result of the loss of circulating fluid into the limb. Thrombosis occurred in 60% of the survivors, and their limbs rapidly returned to normal. In the absence of thrombosis the swelling began to subside in a few days, but in the majority of the animals there was loss of tissue or ulceration of the limb. After a month some oedema persisted, but ulceration had healed and function had returned. These limbs presented the signs associated with arterio-venous fistula—dilated superficial veins, a continuous bruit, and slowing of the pulse when the anastomosis was compressed.

Angiography showed that the venous valves became incompetent soon after operation. The medium travelled no farther than the middle of the leg or the ankle, and then returned by other veins towards the vena cava. Further evidence of the absence of a reversed flow in the foot was provided by the finding of low oxygen tension in foot veins some months after operation. All 3 dogs in Group 3 died with swollen limbs within 18 hours of operation, and so did 2 animals in Group 4. In the third animal in the last group, in which the saphenous vein was left as a possible outflow, transection–re-implantation was delayed for 3 months. Gangrene of the entire limb was evident within 2 days after this was done.

It is concluded from these experiments that true reversal of the circulation does not occur when the arterial blood is shunted into the companion vein and that a state of affairs resembling an arterio-venous fistula ensues. The distal part of the limb is deprived of blood and gross oedema is produced; this oedema is due to the transmission of the high arterial pressure to the capillaries without the intervention of the arterioles.

C. J. Longland

VEINS

182. **A Critical Evaluation of the Antithrombin Test for Venous Thrombosis**

J. McLACHLIN, R. PAUL, and J. C. PATERSON. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 297–301, March, 1952. 4 figs., 7 refs.

The antithrombin test for the prediction of venous thrombosis has been evaluated by comparing the blood antithrombin levels of seriously ill patients during life with the presence or absence of venous thrombi as revealed at autopsy. A complete lack of correlation has been obtained by this method of assessment. The most striking feature has been the demonstration of definite venous thrombi of the lower extremities in individuals who had consistently shown a "safe" antithrombin level during life. We cannot, therefore, recommend this test for the prediction of venous thrombosis under ordinary hospital conditions.—[Authors' summary.]

183. **Spontaneous Thrombophlebitis**

P. T. DeCAMP, R. M. LANDRY, A. OCHSNER, and M. E. DeBAKEY. *Surgery* [*Surgery*] **31**, 43–54, Jan., 1952. 10 figs., 23 refs.

A study is presented of spontaneous thrombophlebitis as a disease entity as opposed to thrombophlebitis as a secondary phenomenon. The relative incidence of thrombophlebitis occurring spontaneously is from 5 to 27% of all cases of thrombophlebitis in different series, the latter figure being the incidence in U.S. Army personnel, and therefore not comparable to that occurring in a general hospital. Superficial or deep veins may be affected, and phlebothrombosis as well as thrombophlebitis may occur. Recurrent thrombophlebitis may be associated with gout or Buerger's disease, but the authors are of the opinion that there is little association between thrombophlebitis and the subsequent development of Buerger's disease.

Generally the clinical course of the condition resembles that of secondary thrombophlebitis, pulmonary embolism occurring in the silent type of phlebothrombosis not infrequently, but occurring rarely in the inflammatory type. The visceral veins are sometimes similarly affected.

The aetiology of spontaneous thrombophlebitis is discussed, and gout, sclerosis of the wall of the veins, bacterial infections, thrombocytopenia, tobacco sensitivity, and virus infections are all considered as possible causes in some cases.

Peter Martin

HYPERTENSION

184. **Observations on Some Possible Precursors of Essential Hypertension and Coronary Artery Disease**

C. B. THOMAS. *Bulletin of the Johns Hopkins Hospital* [*Bull. Johns Hopk. Hosp.*] **89**, 419–441, Dec., 1951. 14 figs., 38 refs.

At the end of the first 4 years a preliminary report is submitted on some 400 medical students of Johns Hopkins University who have been taking part in an investigation designed to elucidate the importance of some traits most frequently associated with the early onset of hypertension and coronary artery disease. This investigation included detailed heredity studies, studies of the cardiovascular system at rest and under stress, metabolic investigations, and personality studies. In no fewer than 93 out of 353 students there was a history of hypertension or coronary artery disease in at least one parent. In this group with a "positive" parental history there appeared to be a significant pro-

portion of subjects with high resting blood pressure and heart rate, transitory tachycardia, and hyperreactivity to the cold pressor test and to exercise tests; 36% of 332 subjects showed evidence of definite hypercholesterolaemia.

[The hereditary factor in essential hypertension and coronary artery disease is now undisputed. It remains to be seen what, if any, significance can be attached to the finding of other " precursors " of hypertension and coronary atherosclerosis; the follow-up results in these (now apparently healthy) young subjects, extending over many decades, should be of some help.]

A. I. Suchett-Kaye

185. **The Size of the Heart during the Course of Essential Hypertension**

M. KLEINFELD and J. REDISH. *Circulation* [*Circulation*] **5**, 74–80, Jan., 1952. 8 refs.

The transverse diameter of the heart of 45 hypertensive patients was observed by teleradiography over a period of 5 to 20 years. It was found that 10 patients had normal measurement for 5 to 10 years, and 13 for more than 10 years. The degree of enlargement was assessed by comparing actual size with the predicted size as given in the tables of Ungerleider and Clark, and in some cases by fluoroscopy.

Progressive enlargement was seen in 24 patients, while in 18 the heart size remained stationary; 3 patients showed sudden increase in size followed by progressive enlargement. Cardiac failure might occur in patients with normal heart measurements, and marked enlargement might be present for 10 or more years with little functional impairment. Cardiac infarction might lead to sudden enlargement or be followed by no change in heart size. Reduction of body weight by 20 to 40 lb. (9 to 18 kg.) did not reduce the size of the heart.

The authors conclude that the size of the heart has, by itself, little value in deciding the prognosis in essential hypertension. *J. W. Litchfield*

186. **The Treatment of Hypertension with Hexamethonium**

E. D. FREIS, F. A. FINNERTY, H. W. SCHNAPER, and R. L. JOHNSON. *Circulation* [*Circulation*] **5**, 20–27, Jan., 1952. 2 figs., 19 refs.

Hexamethonium bromide was given subcutaneously to 32 hypertensive patients for periods of 1 to 5 months. Significant remission resulted in 12, and after the addition of 1-hydrazinophthalazine (" C–5968 ") in 8 others. Of these 20 patients, 10 had malignant hypertension. Oral therapy was less effective. *Paul Wood*

187. **The Effect of 1-Hydrazinophthalazine in Hypertension**

H. A. SCHROEDER. *Circulation* [*Circulation*] **5**, 28–37, Jan., 1952. 8 figs., 10 refs.

1-Hydrazinophthalazine (" C–5968 ") and a derivative, 4-methyl-1-hydrazinophthalazine (" C–6130 "), which are relatively new sympathicolytic agents, partly oppose adrenaline, hypertensin, and noradrenaline, and are believed to act on the hind- or mid-brain. They inhibit the pressor response to pain and to the Valsalva manœuvre. In the dog and rabbit they cause increase in renal and femoral blood-flow, while the blood pressure is lowered.

In the present paper are described the results obtained at the Barnes and City Hospitals, St. Louis, Missouri, when these drugs were given to 50 hypertensive patients selected as representative of the three forms of hypertension—essential, malignant, and renal. The dose was 50 to 150 mg. 4- to 8-hourly by mouth, continued for 1 to 40 weeks. Significant reduction in blood pressure was obtained in 35 instances. Renal function was not depressed. Malignant hypertension appeared to respond better than benign, and renal hypertension scarcely at all.

Toxic symptoms or side-effects included transient headache, stuffiness of the nose, watering of the eyes, and injection of the conjunctivae, often relieved by anti-histaminic drugs, tachycardia and postural hypotension, nausea, vomiting, abdominal cramps, and desire to defaecate. Small initial doses are advised in view of occasionally severe hypotensive episodes.

Paul Wood

188. **Comparison of Oral and Subcutaneous Administration of Methonium Salts in the Treatment of High Blood-pressure**

J. A. KILPATRICK and F. H. SMIRK. *Lancet* [*Lancet*] **1**, 8–12, Jan. 5, 1952. 1 fig., 20 refs.

To produce therapeutic falls in blood pressure, much larger doses of hexamethonium bromide are needed by the oral than by the subcutaneous route. The effects of oral administration continue longer but in most patients they are less predictable from one occasion to another.

Symptoms of intolerance develop in a large proportion of patients when effective doses are given by mouth. Among the symptoms encountered were malaise, diarrhoea, abdominal distension, nausea, vomiting, and occasionally collapse. Constipation has not been prominent. Oral therapy is more likely to be successful when the subcutaneous dose needed to control blood-pressure is small, either from natural sensitivity, after sympathectomy, or where excretion is delayed, as in some patients with chronic nephritis. Sometimes a salt-poor diet makes oral therapy possible with hexamethonium bitartrate.

Patients whose blood-pressure reduction is inadequate or who have important side-effects from oral H.M.B. should be maintained on the insulin-like régime of subcutaneous H.M.B. The best results can be obtained only by adjusting the dose, times of administration, and mode or modes of administration in terms of whole-day observations of the patient's response. In practice such tests must be made by trained technicians. Failure to ameliorate hypertensive manifestations with hexamethonium salts is usually due to a defect in technique, such as neglect to make use of the more satisfactory falls of blood pressure in the standing and sitting postures, neglect of the changing sensitivity to H.M.B., incorrect usage, or unwillingness to use the subcutaneous route when the oral route is unsatisfactory.—[Authors' summary.]

Haematology

189. **Polycythaemia Vera. Experimental and Clinical Aspects; Differential Diagnosis.** (Polycythémie vraie. Aspects cliniques et expérimentaux; diagnostic différentiel)
H. C. Moffit, J. H. Lawrence, and N. I. Berlin. *Revue d'Hématologie* [*Rev. Hémat.*] **6**, 463–469, 1951. 23 refs.

[This paper does not record original work, but is a most useful review of the various points which have to be considered in the differential diagnosis between polycythaemia vera and secondary polycythaemia. There is a good bibliography containing a number of references to original work by the authors.] Secondary polycythaemia may occur at high altitudes, it may be the result of disease, or it may be " relative ", that is, due to a low plasma volume. Thus the history of the patient, a physical and haematological examination, determination of the blood volume, bone-marrow puncture, measurement of the oxygen saturation of the blood and its viscosity, and studies of iron utilization and basal metabolism will all contribute towards the diagnosis. The authors suggest that in the great majority of cases the clinical history and physical and haematological examination will enable one to make a correct diagnosis. Only in a few cases should there be need for the determination of the blood volume and of the oxygen saturation of blood.

H. Lehmann

190. **The Pathogenesis of Polycythaemia and the Principles of its Rational Treatment.** (О патогенезе полицитемии и принципах ее рациональной терапии)
N. N. Kolotova-Payevskaya. *Клиническая Медицина* [*Klin. Med., Mosk.*] **29**, 62–67, Dec., 1951. 1 fig., 18 refs.

It has been suggested that polycythaemia may arise from a disturbance of the central nervous system influencing the nerve-endings in the walls of the arterioles, capillaries, or sinuses of the bone marrow, from diminished haemolysis, or from hypoxaemia. While the first hypothesis has some grounds for support in that it has been shown that blood changes may take place through central influences, the author has found, in numerous investigations, no relation between the rate of haemolysis, as measured by the excretion of stercobilin, and the occurrence of polycythaemia, while her investigations on arterial and venous hypoxia have shown that no relation exists between its severity and the development of erythraemia. Khasanov has shown that in Ayerza's syndrome an essential condition for the development of erythraemia is the combination of broncho-pulmonary sclerosis with sclerosis of the pulmonary vessels. Histological examination, immediately post mortem, of bone marrow from persons who had died with erythraemia showed in all cases considerable thickening of the argyrophil fibres of the vessels, whereas that from patients dying of hypoxaemia of pulmonary origin but without erythraemia revealed no such thickening, although the pulmonary stroma showed in some cases a well-marked increase in argyrophil tissue. In one case of patent ductus arteriosus in which erythraemia developed after long-standing congestive heart failure the changes in the argyrophil fibres were patchy and the bone marrow was in some places normal, in others much affected. The author concludes that this change leads first to erythropoiesis, and later to atrophy and even aplasia of the marrow.

Radiotherapy leads to myelofibrosis and may therefore hasten the onset of aplastic anaemia; for this reason it is not a satisfactory treatment. Phenylhydrazine and acetylphenylhydrazine increase haemolysis, and the increased concentration of breakdown products of haemoglobin may cause damage to marrow function; also haemoclastic shock may injure the parenchymatous tissue of other organs. The treatment of choice is oxygen therapy, combined with bleeding to the extent of 500 to 600 ml. twice a week, until the haemoglobin level falls to 90%, the erythrocyte count to 5,000,000 per c.mm., the haematocrit value to 45 to 55, and the blood volume to 5 litres. At first the bleedings may seem ineffective, since the lost corpuscles of the circulating blood are replaced from the reserve depots: but continued treatment produces a response. This treatment should be accompanied by a diet poor in animal protein, but rich in carbohydrates, fats, and milk and vegetable protein, as well as in vitamins A and C. Patients thus treated soon become fit for work and only require repeated courses at intervals of one or two years.

L. Firman-Edwards

191. **Studies on Platelets—I. The Relationship of Platelet Agglutination to the Mechanism of Blood Coagulation**
M. Stefanini and J. H. Silverberg. *American Journal of Clinical Pathology* [*Amer. J. clin. Path.*] **21**, 1030–1038, Nov., 1951. 14 refs.

The authors have observed the influence of various factors on platelet agglutination *in vitro* by the serum of patients with idiopathic thrombocytopenic purpura. Previous findings had suggested that in some cases of this disease destructive mechanisms against platelets exist. The agglutinating property of serum on platelet suspensions was studied in normal serum and in serum from patients with haemophilia and with thrombocytopenia in which high prothrombin activity was present. These samples of serum were studied again after deprothrombinization and decalcification.

Blood was collected in silicone-coated tubes, platelets being washed in phosphate-buffered saline after collection by centrifugation. Decalcification of the serum was

carried out when required by adding "amberlite 1R–100" or sodium oxalate. To prevent agglutination by prothrombin of the platelets in the control tubes the serum was usually deprothrombinized by centrifuging 1 ml. of 0·008 M tricalcium phosphate gel for 5 minutes at 2,000 revolutions per minute (r.p.m.); the supernatant was discarded, the side of the tube dried with filter-paper, and 1 ml. of serum added and centrifuged at 2,000 r.p.m. for 15 minutes. To prepare the serum–platelet mixtures for agglutination studies the serum was divided into two aliquots, one sample being deprothrombinized. Platelet agglutination was read by macroscopical examination with a hand lens.

Results showed that the ability of serum to agglutinate platelets was directly related to its prothrombin activity, whether the serum was obtained from healthy sources or from cases of thrombocytopenic purpura, asymptomatic purpura, or haemophilia. When serum was decalcified the platelet-agglutinating property was lost, although the prothrombin activity was only slightly affected. A saline suspension of platelets was centrifuged and the supernatant saline removed. Serum with prothrombin activity was added to the platelets, and at varying intervals the supernatant fluid was added to human deprothrombinized plasma. Formation of a clot was observed, the time taken depending on the prothrombin activity of the serum. (In studies previously reported it was observed that Seitz filtration removed prothrombin from human serum only if it had previously been decalcified.)

The authors conclude that platelet agglutination follows evolution of thrombin and does not occur when serum is deprothrombinized or decalcified. All the factors necessary for thrombin formation are required for agglutination of platelets, although there is not yet proof that thrombin is the agent. *T. M. Pollock*

192. **A New Inherited Abnormality of Hemoglobin and its Interaction with Sickle Cell Hemoglobin**
E. KAPLAN, W. W. ZUELZER, and J. V. NEEL. *Blood* [*Blood*] **6**, 1240–1259, Dec., 1951. 7 figs., 44 refs.

The authors report studies of 2 families, in some members of which a new form of haemoglobin was found to occur. The new haemoglobin, termed haemoglobin III, can be separated from normal and sickle-cell haemoglobin by electrophoresis (Haus and Neel, *Proc. nat. Acad. Sci.* (*Wash.*), 1950, **36**, 613) and has been observed in association with normal and with sickle-cell haemoglobin, but has not yet been found as the only haemoglobin present. The family studies suggest that the presence of haemoglobin III is determined by a single autosomal character-difference with marked single-dose expression. Individuals with haemoglobin III and normal haemoglobin have no subjective complaints referable to the haematological system, and the haemoglobin level, cell and reticulocyte counts, and serum bilirubin level are normal; but in a stained film between 3% and 25% of the cells are target cells, and the osmotic fragility is usually decreased. Such cells are eliminated abnormally rapidly when transfused into a normal recipient. Individuals with haemoglobin III and sickle-cell haemoglobin have a mild anaemia (9 to 12 g. haemoglobin per 100 ml.) and the stained film shows 45 to 70% of target cells. Their erythrocytes sickle readily *in vitro*, splenomegaly is constant, and infections are often accompanied by an exacerbation of the anaemia and by jaundice. This anaemia is very much milder than is classical sickle-cell anaemia. Carriers of haemoglobin III and normal haemoglobin differ haematologically from patients heterozygous for the Mediterranean-anaemia gene, and the combination of haemoglobin III and sickle-cell haemoglobin is haematologically and clinically distinct from the combination of Mediterranean anaemia and the sickle-cell trait as described by Silvestroni and Bianco.

There is as yet no evidence whether the new factor is an allele of the thalassaemia or sickle-cell factor, nor whether it is quite independent of these.

George Discombe

193. **Familial Erythroid Multinuclearity**
J. A. WOLFF and F. H. VON HOPE. *Blood* [*Blood*] **6**, 1274–1283, Dec., 1951. 6 figs., 6 refs.

A woman and her 3 children came under observation at different times and for different complaints. Each had, at one time or another, mild anaemia (9·5 to 12·5 g. of haemoglobin per 100 ml. blood). Bone-marrow studies showed gross abnormalities among the erythroblasts, 12 to 20% being multinucleate and 1 to 4% showing many nuclear fragments: most multinucleate cells had 2 nuclei, but cells with 3 or 4 nuclei were not rare, and a few with 6 or 7 nuclei were seen. The peripheral blood showed minimal or marked macrocytosis not affected by iron, folic acid, or vitamin B_{12}. It is suggested that the condition is transmitted as an autosomal character-difference with marked single-dose expression. *George Discombe*

194. **The Evaluation of Eosinophil-counts**
J. N. SWANSON, W. BAUER, and M. ROPES. *Lancet* [*Lancet*] **1**, 129–132, Jan. 19, 1952. 2 figs., 26 refs.

The authors, using Randolph's method of staining, studied the normal diurnal variation in eosinophil count in healthy and arthritic subjects and the effect on this count of stress. It was found that the effect of meals could be disregarded, so that fasting is unnecessary in such investigations. In all cases there was a high early-morning level falling to a slight midday rise and falling again in the afternoon to an evening rise. This spontaneous fall might be by more than 50% in the morning and as much as 40% in the afternoon. It was evident that day-to-day counts must be made at the same time, and that an eosinopenia apparently induced by corticotrophin or other agents such as adrenaline could not be regarded as necessarily due to the agent unless the latter was given in the afternoon and produced a fall of over 40% in the count lasting more than 2 hours. It is important to make hourly counts for 4 hours after injection, because the maximum fall was sometimes found at the second or third hour.

[This careful work may well invalidate much experimental work in which eosinopenia is used as evidence of

adrenocortical activity after administration of corticotrophin or as evidence of the corticotrophin-like action of various agents. Great care obviously needs to be taken not only with the actual technique of eosinophil counting, but also to allow for normal variation.]

Marjorie Le Vay

195. **A Study of the Reticular Stroma of Lymph Nodes.** (Ricerche sullo stroma reticolare dei linfonodi)
E. L. BENEDETTI. *Archivio per la Scienze Mediche* [*Arch. Sci. med.*] **76**, 435–464, Dec., 1951. 17 figs., bibliography.

Fresh unfixed cervical lymph nodes from healthy guinea-pigs were sectioned on the freezing microtome and studied by phase-contrast microscope after being kept for variable periods in solutions of different *p*H. In physiological saline the fibres of reticular cells are easily demonstrated, but in distilled water the fibres become thin, sometimes wavy and coarse, and sometimes lacerated. In an acid medium the fibres develop a longitudinal striation and become looser in structure. In alkaline solutions they become far less distinct. It is concluded that reticular fibres consist of filiform structures, the fibrils. The reticular meshwork has a certain amount of elasticity depending mainly on the swelling or shrinking of the fibrils. *E. Neumark*

196. **The Life Span of Leucocytes in the Human**
D. L. KLINE and E. E. CLIFFTON. *Science* [*Science*] **115**, 9–11, Jan. 4, 1952. 1 fig., 9 refs.

The life span of human leucocytes has been estimated by the authors, at Yale University School of Medicine, by the incorporation of radioactive phosphorus (^{32}P) into their nucleoproteins during development. From 6 subjects with normal leucocyte counts, who had received 2·5 mc. of ^{32}P by mouth, blood was taken every second day for periods up to 3 weeks, and the radioactivity of the phosphorus extracted from the separated leucocytes was determined. From the results, treated semi-mathematically, it is inferred that leucocytes (no differentiation of type is attempted) have an average life-span of 12·8 days from the time of administration of the isotope, and that they circulate for 8·8 days after their release into the blood. *H. Payling Wright*

ANAEMIA

197. **Contribution to the Knowledge of the Intrinsic Factor of Castle.** (Contributo alla conoscenza del fattore intrinseco di Castle)
C. CEI. *Haematologica* [*Haematologica*] **35**, 779–842, 1951. 5 figs., bibliography.

This long review deals with historical, bibliographical, and personal observations on the intrinsic factor of Castle, which is produced by the glands in the fundus of the stomach. The author finds as follows: anaemia developing after gastrectomy is due to iron deficiency and some other unknown cause, but is not due to the absence of the pyloric portion of the stomach. The intrinsic factor is not related to gastric acidity, chloride, or pepsin. It is present in normal amount in gastritis, peptic ulcer, and carcinoma of the stomach. In the gastric juice of some patients with pernicious anaemia the intrinsic factor is present, but not in sufficient amount to produce the anti-pernicious-anaemia principle when combined with extrinsic factor. Healthy people and patients with pernicious anaemia excrete a substance in the urine which is similar to the anti-pernicious-anaemia principle. *E. Neumark*

198. **The Haemopoietic Effect of Vitamin B_{12} Prepared from Fish**
K. HAUSMANN and K. MULLI. *Lancet* [*Lancet*] **1**, 185–188, Jan. 26, 1952. 4 figs., 13 refs.

Gutted fish were autoclaved and pressed and the resulting juice was concentrated. Microbiological assays showed a high vitamin-B_{12} potency. No microbiologically active material was extracted with butanol, but after the concentrate had stood for 8 days with potassium cyanide added, red pigments were extractable with butanol which showed the absorption spectrum of vitamin B_{12} and were microbiologically active. Cobalt-containing red pigments, both subjected and not subjected to treatment with potassium cyanide, were administered parenterally to patients with pernicious anaemia.

A dose of the " fish soluble " not treated with KCN, and equivalent to 100 to 120 μg. of vitamin B_{12} by microbiological assay, produced no response in 4 cases of pernicious anaemia. On the other hand, the KCN-treated " fish soluble " in a dose equivalent to 50 to 60 μg. of vitamin B_{12} by microbiological assay produced remission and a reticulocyte response in 3 cases of pernicious anaemia. It is presumed that the red pigments in " fish solubles " are peptide conjugates of vitamin B_{12} which can be utilized by bacteria, but not by patients with pernicious anaemia. *John F. Loutit*

199. **Corticotrophin in Experimental Haemolytic Anaemia.** (ACTH und experimentelle hämolytische Anämien)
W. TISCHENDORF, G. ECKLEBE, and E. THOFERN. *Zeitschrift für die Gesamte Experimentelle Medizin* [*Z. ges exp. Med.*] **118**, 203–212, 1952. 7 figs., 10 refs.

Acute haemolytic anaemia was produced in one group of dogs by means of a single large injection, and chronic haemolytic anaemia in another by repeated smaller injections of rabbit anti-dog-erythrocyte serum. Injections of 25 to 100 mg. corticotrophin or 50 mg. cortisone had no significant effect on the course of the anaemia. Corticotrophin was equally ineffective in acute and chronic anaemia caused by phenylhydrazine.

George Discombe

200. **Effect of Adrenocorticotropic Hormone on Clinical and Experimental Haemolytic Anaemia**
K. P. CLEARKIN. *Lancet* [*Lancet*] **1**. 183–185, Jan. 26, 1952. 11 refs.

When corticotrophin, which has been recommended for the treatment of acquired haemolytic anaemia, was given in 2 cases of this disease, one was markedly and the other only doubtfully improved. To investigate the action of this drug more fully guinea-pig erythrocytes

were injected intravenously into rabbits; 2 of the animals also received 7·5 mg. of cortisone daily by intramuscular injection. Examination of the rabbits' blood at the end of the experiment showed that cortisone did not inhibit production of antibody. Moreover, guinea-pigs made anaemic by the rabbit anti-guinea-pig serum were not protected by cortisone. *John F. Loutit*

201. **Recent Researches in the Genetics of Drepanocytosis (Sickle-cell Anaemia).** (Ulteriori ricerche di genetica sulla drepanocitosi)
I. GATTO and G. PURRAZZELLA. *Pediatria* [*Pediatria*] **59**, 789–798, Nov.–Dec., 1951. 2 figs., 9 refs.

Sickle-cell anaemia appears among the offspring of parents each of whom has the sickle-cell trait, the anaemia presumably occurring in a homozygous subject. In 3 families the interaction of the sickle-cell trait and the Mediterranean-anaemia trait was observed. When both are present in a single subject a chronic haemolytic anaemia with mild crises occurs; the erythrocytes are small, often badly haemoglobinized, and many are target cells. Osmotic fragility is decreased and icterus is present. *George Discombe*

202. **Studies on Abnormal Hemoglobins—III. The Interrelationship of Type S (Sickle Cell) Hemoglobin and Type F (Alkali Resistant) Hemoglobin in Sickle Cell Anaemia**
K. SINGER and A. I. CHERNOFF. *Blood* [*Blood*] **7**, 47–52, Jan., 1952. 1 fig., 10 refs.

Concentrated solutions of haemoglobin from patients with sickle-cell anaemia or sickle-cell trait form gels on treatment with carbon dioxide, and spindle-like particles known as tactoids can be seen by phase-contrast microscopy. Neither normal nor foetal haemoglobin has this property. The authors have previously isolated an alkali-resistant haemoglobin from patients with sickle-cell anaemia, and they find that this substance does not form gels or tactoids following exposure to carbon dioxide. They conclude that alkali-resistant haemoglobin is unlikely to be a variant of sickle-cell haemoglobin. *P. C. Reynell*

203. **The Significance of Hemoglobinemia and Associated Hemosiderinuria with Particular Reference to Various Types of Hemolytic Anemia**
W. H. CROSBY and W. DAMESHEK. *Journal of Laboratory and Clinical Medicine* [*J. Lab. clin. Med.*] **38**, 829–841, Dec., 1951. 28 refs.

Estimations of plasma haemoglobin concentration and tests for urinary haemosiderin were made on over 100 patients with a variety of haemolytic and other blood disorders. In several haemolytic diseases haemoglobinaemia of a degree not great enough to cause haemoglobinuria was demonstrated. Haemosiderin was detected in the urine whenever the plasma haemoglobin level was raised, the increases being roughly in proportion; but a lowering of plasma haemoglobin level was not usually followed by an appreciable fall in haemosiderinuria. In children urinary excretion of haemosiderin was generally less than was found in adults with a similar plasma haemoglobin level. With the exception of one patient with haemochromatosis, haemosiderinuria was found only in conjunction with a raised plasma haemoglobin level.

Acquired haemolytic anaemia was associated with raised plasma haemoglobin level, particularly during crises, a fall in plasma haemoglobin level being the first sign demonstrated as the patients improved. After splenectomy the haemoglobinaemia was usually reduced, although in 2 patients other signs indicated continuing severe haemolysis. This seems to indicate that there may be another type of haemolytic process which is neither splenic nor intravascular.

In 13 patients with congenital acholuric jaundice (including 3 with crises) who were repeatedly examined the plasma haemoglobin level was normal or below, and haemosiderin was absent from the urine in all but one case, complicated by pernicious anaemia.

Sickle-cell and severe Mediterranean anaemia nearly always raised the plasma haemoglobin content to a level which was remarkably constant in the individual. One case is of particular interest: a man aged 21 with Mediterranean anaemia relapsed, the spleen enlarged, and he required frequent blood transfusions; his plasma haemoglobin was estimated frequently and was always below 3 mg. per 100 ml. Splenectomy resulted in great clinical improvement and no transfusions were required. For the first time, however, his blood showed the classical erythroblastic picture of severe Mediterranean anaemia, and the plasma haemoglobin level rose and remained raised. The authors suggest that erythrocytes which had previously been destroyed in the spleen without adding to plasma haemoglobin were now surviving to be haemolysed intravascularly with consequent haemoglobinaemia.

In diagnosis an increased plasma concentration of haemoglobin provides unequivocal evidence of abnormal haemolysis and may help in distinguishing between sickle-cell trait and sickle-cell anaemia, between mild and severe Mediterranean anaemia, and between acquired haemolytic anaemia and uncomplicated congenital acholuric jaundice. *Peter Story*

204. **Acute Idiopathic Paroxysmal Cold Haemoglobinuria of Non-syphilitic Type in a Child**
W. P. SWEETNAM, E. F. MURPHY, and R. C. WOODCOCK. *British Medical Journal* [*Brit. med. J.*] **1**, 465–466, March 1, 1952. 5 refs.

NEOPLASTIC DISEASES

205. **Observations on the Effect of Various Folic Acid Antagonists on Acute Leukemia**
S. J. WILSON. *Blood* [*Blood*] **6**, 1002–1012, Nov., 1951. 4 figs., 23 refs.

At the University of Kansas School of Medicine a series of 70 patients with acute leukaemia were treated with aminopterin, a-methopterin, amino-an-fol, or a-ninopterin. Daily clinical examinations, frequent blood counts, and repeated bone-marrow biopsies were used in assessing the value of treatment. Clinically, dosage was

maintained at a level which would keep the tip of the tongue in a state of redness, and was reduced when this redness involved larger areas. In cases with a good response enlargement of lymph nodes, spleen, and liver disappeared between the 2nd and 5th weeks. The longest remission lasted 490 days. Of 38 patients with acute lymphatic leukaemia, the response in 10 was good, but in 18 it was poor. Of the 23 patients with monocytic leukaemia only one responded well, and of the 4 with myeloid leukaemia none did well. Younger patients did better than older ones, but the duration of a remission could not be predicted. In the 3rd and 4th weeks the number of platelets in the peripheral blood rose in favourable cases, followed by an increase in neutrophil count and then in erythrocyte count. In the bone marrow leukaemic cells persisted in all cases, though myeloid, erythroid, and megakaryocyte proportions became more normal during remissions. Toxic complications of the folic acid antagonists included glossitis, ulceration of the oral mucosa, and, in one case each, severe diarrhoea and marrow aplasia; 4 patients developed thrombocytopenia and 2 alopecia. These complications usually ceased when treatment was stopped, but did not respond to treatment with vitamin B_{12} or liver extracts. No patient was cured. *E. Neumark*

206. **Congenital Leukaemia**
W. G. BERNHARD, I. GORE, and R. A. KILBY. *Blood* [*Blood*] **6**, 990–1001, Nov., 1951. 2 figs., 19 refs.

Leukaemia was diagnosed in 4 infants who died between the ages of 19 hours and 68 days and on whom careful haematological, morbid anatomical, and histological examinations were made at the Armed Forces Institute of Pathology, Washington, D.C. The leukaemic process was myeloid in type and in all cases the cells showed differentiation. As in 3 cases there were also congenital abnormalities such as an inter-atrial septal defect, the Klippel–Feil syndrome, and dextrocardia, it is suggested that all the anomalies arose before the 14th week of intra-uterine life. The 14 other examples of congenital leukaemia described in the literature are reviewed. *E. Neumark*

207. **Influence of Age and Sex upon Frequency and Cytologic Types of Human Leukemias. Evidence of a Myeloid : Lymphoid Antagonism**
J. DAUSSET and V. SCHWARZMAN. *Blood* [*Blood*] **6**, 976–989, Nov., 1951. 1 fig., bibliography.

Out of a series of 212 cases of acute leukaemia observed in numerous hospitals in Paris, the cytology in 58 was studied by phase-contrast microscopy of blood and bone-marrow smears, cell motility and detailed morphology being investigated and peroxidase and supravitally stained preparations made. Leukaemia is generally acute in the young and chronic in adults, and the different types correspond to different age groups: congenital leukaemia is mainly myeloblastic; in early life lymphoblastic leukaemia predominates, with a peak between 3 and 6 years; in early adult life acute myeloid leukaemia is common; chronic myeloid leukaemia reaches its peak between the ages of 35 and 50 years; and between 50 and 70 years chronic lymphatic leukaemia is more common. Among the 58 cases studied by phase-contrast microscopy there were 23 of acute lymphoblastic and 28 of acute myeloid leukaemia, this incidence agreeing with that in the whole series of 212 cases. Of all types of leukaemia males provide about 70% of cases, but in chronic lymphatic leukaemia the proportion of cases in males is 79% and in chronic myeloid leukaemia 58%. These considerations, as well as certain experimental and clinical evidence quoted from the literature, suggest that the endocrine glands have a definite influence on the production and maturation of leucocytes and determine the lymphoid–myeloid equilibrium, and that endocrine influences therefore cause the predominance of myeloid leukaemia during the period of maximal procreative activity in life. *E. Neumark*

208. **Pericarditis in Patients with Leukemia**
H. R. BIERMAN, E. K. PERKINS, and P. ORTEGA. *American Heart Journal* [*Amer. Heart J.*] **43**, 413–422, March, 1952. 4 figs., 14 refs.

209. **A Quantitative Evaluation of the Contribution of Nitrogen Mustard to the Therapeutic Management of Hodgkin's Disease**
A. GELLHORN and V. P. COLLINS. *Annals of Internal Medicine* [*Ann. intern. Med.*] **35**, 1250–1259, Dec., 1951. 2 refs.

The authors, working at the Presbyterian Hospital, New York, have made a comparative study of 67 cases of Hodgkin's disease treated by alternating courses of nitrogen mustard (0·2 mg. per kg. body weight on 2 consecutive days) and *x*-ray therapy and 65 cases receiving *x*-ray therapy alone. The 4-year survival rate from the onset of symptoms, from the time of biopsy confirmation, or from the time of manifest generalized disease did not appear to be significantly different in the two groups of patients. The irradiation treatment time was reduced by one-half in patients receiving irradiation and nitrogen mustard as compared with the irradiation treatment time of patients receiving radiotherapy only. This suggested that the amount of irradiation needed was less, the asymptomatic period greater, and the economic burden lighter for patients receiving the combined therapy. Subjective and objective improvement followed 78% of the courses of nitrogen mustard treatment. Serious toxicity in the form of depression of haematopoietic function occurred in 7% of patients receiving nitrogen mustard therapy, with one death due to miliary tuberculosis. Of 2 other patients with " inactive " tuberculosis, one died with tuberculous meningitis 18 months after nitrogen mustard therapy. The authors feel that the presence of pulmonary tuberculosis in a patient with Hodgkin's disease is a contraindication to this form of treatment.

They conclude that nitrogen mustard therapy is a useful adjunct to radiotherapy in the management of Hodgkin's disease in reducing the requirement for irradiation, but that this additional therapy does not modify the duration of the disease or the life expectancy of the patient.

I. Ansell

Respiratory System

210. **Asphyxia by Tracheobronchial Secretions**
N. ENDE and J. ZISKIND. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 57–64, Jan., 1952. 7 figs., 22 refs.

Among 137 consecutive necropsies, death in 6 instances had been due to asphyxia following blockage of the whole tracheo-bronchial tree by thick tenacious mucus. In 5 out of the 6 there was diminished lung function due to chronic lung disease or following pneumonectomy, and absence of an adequate cough reflex was believed to be the most important precipitating factor. Atelectasis was obvious in only one case clinically, and obstructive emphysema was a more prominent pathological finding. An unproductive cough was one of the earliest signs, accompanied by rhonchi and diminished breath sounds.

On the basis of these findings the authors consider that in addition to the standard methods of treatment by frequent change in position and postural drainage there should be an early recourse to catheter aspiration, and bronchoscopy without hesitation if there is no immediate improvement. *M. R. Ewing*

211. **A Simple Standard Exercise Test and its Use for Measuring Exertion Dyspnoea**
P. HUGH-JONES and A. V. LAMBERT. *British Medical Journal* [*Brit. med. J.*] **1**, 65–71, Jan. 12, 1952. 6 figs., 32 refs.

A modified step-test for giving a patient a standard amount of exercise in the measurement of exertion dyspnoea is described. The height and rate of stepping can be adjusted to allow for differences in body weight of different patients. The appropriate values are obtained by means of a nomogram, which is reproduced, without calculation. The exercise period is 5 minutes, usually with a work-load of 350 kg.-m. per minute. Expired air is collected by means of a mouthpiece and tube and measured in a modified gas-meter. The rate of stepping is regulated by a metronome. "Standard ventilation" (S.V.) is calculated as the sum of the "standardized excess ventilation" (S.E.V.) and the "resting ventilation" (R.V.). A "dyspnoeic index", $\frac{S.V. \times 100}{M.V.V.}$, is suggested, where M.V.V. is the independently measured maximum voluntary ventilation of the patient. The results of the test in 228 subjects and its application, particularly in coal-miners' pneumoconiosis, are discussed. *A. Schweitzer*

212. **Scrubbing the Pleura in the Treatment of Chronic and Recurrent Spontaneous Pneumothorax**
J. M. BEARDSLEY and V. M. PAHIGIAN. *Surgery* [*Surgery*] **30**, 967–976, Dec., 1951. 8 figs., 24 refs.

The authors recommend treatment by thoracotomy in all cases of chronic and recurrent spontaneous pneumothorax after failure of conservative measures, and claim good results. Broncho-pleural fistulae should be closed by suture and leaking blebs removed by local or segmental resection. They point out that in chronic pneumothorax the lung needs decortication before expansion can be obtained. In all cases the visceral pleura should be scrubbed with rough gauze and post-operative aspiration of fluid instituted to ensure firm pleurodesis. Tube drainage and suction will be needed if lung expansion is incomplete. *S. F. Stephenson*

LUNGS AND BRONCHI

213. **Pulmonary Function Studies in 20 Asthmatic Patients in the Symptom-free Interval**
H. D. BEALE, W. S. FOWLER, and J. H. COMROE. *Journal of Allergy* [*J. Allergy*] **23**, 1–10, Jan., 1952. 12 refs.

All of 20 patients studied at the University of Pennsylvania had a history of asthma extending over several years, and in more than half of them attacks occurred daily or at 2- to 3-day intervals. That they were symptom-free was assumed from the fact that they did not complain of respiratory symptoms at the time of study. Vital capacity, residual air, maximum breathing capacity, pulmonary mixing before and after adrenaline injection, arterial oxygen saturation, and plasma levels of carbon dioxide and other constituents were studied.

The vital capacity was reduced in 12 patients, and the ratio of residual air to total capacity was lowered in all but 4. The maximum breathing capacity was decreased out of proportion to the decrease in vital capacity. After administration of adrenaline there was considerable improvement in the results of all the tests, but none of them reached a normal level, although some came very near it. The arterial oxygen content was in some cases below normal.

The authors conclude that many of the changes found in asthmatics during the symptom-free interval are at least partly reversible. [The main objection to this conclusion is that most of the patients—for instance, those with daily or nightly attacks—were not free from symptoms, even if they did not complain. It is well known that chronic asthmatics have their own standard of dyspnoea, and complain only if it is severe.] *H. Herxheimer*

214. **Congenital Cystic Disease of Lung Associated with Anomalous Arteries**
F. G. KERGIN. *Journal of Thoracic Surgery* [*J. thorac. Surg.*] **23**, 55–65, Jan., 1952. 8 figs., 3 refs.

The author describes 5 cases of a congenital bronchopulmonary displacement in the lower lobe in the region of the pulmonary ligament. This ectopia is supplied with oxygenated blood by an accessory artery from the aorta, but is drained by the pulmonary vein. This constitutes a shunt between the two circulations which, in

one of the cases described, was considered to have reduced the efficiency of the heart. As in previously reported cases, however, it was the associated sepsis which necessitated surgery, all 5 cases being treated by lobectomy. In the last 2 cases the diagnosis was made before operation. *D. M. Pryce*

215. **Treatment of Pulmonary Actinomycosis with Chloramphenicol. Report of a Case**
M. L. LITTMAN, J. S. PAUL, and M. H. FUSILLO. [*Journal of the American Medical Association* [*J. Amer. med. Ass.*] **148**, 608–612, Feb. 23, 1952. 7 figs., 25 refs.

The authors review the literature of actinomycosis since its first description in 1877, and give an account of previous forms of therapy. They suggest that actinomycosis is now regarded in man as endogenous rather than exogenous, and that the anaerobic *Actinomyces israeli* is a frequent, if not normal, inhabitant of the oral cavity and respiratory tract, becoming activated by trauma, such as tooth extraction. Pulmonary actinomycosis is likely to result from aspiration of material from a foul mouth already infected with *Actinomyces*.

Although the cure of actinomycosis with sulphonamides, penicillin, and aureomycin has been reported, none of these methods has been always successful. The present authors have already reported the sensitivity of *A. israeli* to chloramphenicol *in vitro* (*Amer. J. clin. Path.* 1950, **20**, 1076), and now describe its clinical use in one case of pulmonary actinomycosis, in which the strain isolated was sensitive to 3 μg. of chloramphenicol per ml. This patient was treated with daily doses of 4·5 g. (later reduced to 2·0 g.) of chloramphenicol by mouth for 2 months, and the instillation of 2 g. of crystalline chloramphenicol suspended in saline into the empyema cavity on 2 occasions. A complete cure was obtained. The authors comment on the inadequacy of aureomycin, penicillin, and sulphonamides for permanent cure, especially in controlling the anaerobic streptococci which co-exist with *Actinomyces* in the pulmonary lesions. They noted no serious effect of chloramphenicol on the blood count.

[It is to be noted that in the authors' review of treatment no mention is made of radiotherapy, with which a number of cures have been reported in the literature.] *B. Sandler*

216. **The Clinical Features of the Pneumonias Undergoing Virus Tests**
G. H. JENNINGS. *British Medical Journal* [*Brit. med. J.*] **1**, 128–129, Jan. 19, 1952. 18 refs.

The author reviews the clinical findings in 159 cases of non-bacterial pneumonia treated in the Edgware General Hospital, London, between January, 1949, and May, 1950. In view of the difficulty of distinguishing the various forms of pneumonia on clinical and radiological grounds, complement-fixation tests for various viruses and the *Streptococcus*-M.G. agglutination test were carried out in most cases in addition to the usual pathological investigations. The patients were divided into two groups, the first being those seen between Jan. and Sept., 1949, and the second those seen between Nov., 1949, and May, 1950; the former covering a fairly severe outbreak of influenza of Type A, and the latter a less severe outbreak of influenza of Type B. The following table shows the composition of the two groups, as determined by the special tests, those cases classified as of "primary atypical pneumonia" having a cold agglutinin titre of over 1 in 16.

	Group I	*Group II*
Influenza (confirmed)	16	18
Influenza (probable)	22	—
Primary atypical pneumonia ..	11	11
Psittacosis–ornithosis	—	2
Unclassified	39	40
Total	88	71

The author proceeds to analyse in detail the various clinical types of pneumonia encountered and concludes that the cases of influenza could not have been detected except by means of the complement-fixation tests. It is noted that many of these showed secondary infection with *Staphylococcus aureus*. Other types of virus pneumonia encountered often showed a sudden onset, occurred sporadically throughout the year, and in 22 cases were associated with a high titre of cold agglutinins. The tendency in such cases for haemolytic anaemia to develop is noted, though the severity of the haemolytic process is not correlated with the height of the cold agglutinin titre. It is interesting to note that no case of Q fever was found. *R. H. J. Fanthorpe*

217. **Pulmonary Adenomatosis**
J. C. VALENTINE and N. WYNN-WILLIAMS. *British Journal of Tuberculosis* [*Brit. J. Tuberc.*] **46**, 37–42, Jan., 1952. 6 figs., 2 refs.

The authors describe 3 cases of so-called "adenomatosis" of the lung. The only distinctive feature of these growths appears to be the widespread lining of alveolar spaces by well-differentiated columnar tumour cells. Although no definite primary focus in the bronchial tree is demonstrated in such cases, there is little doubt that the growths are carcinomata of bronchial origin, but with a special tendency to intra-alveolar spread. In 2 of the 3 cases described evidence of lymphatic permeation was present, and the third case showed also metastatic deposits in several lymph nodes. *R. A. Willis*

218. **A Contribution to the Problem of Adenomatosis of the Lungs in Man.** (К вопросу об аденоматозе легких у человека)
A. H. KOLTOVER. *Архив Патологии* [*Arkh. Patol.*] **13**, 52–59, No. 6, 1951. 4 figs., 14 refs.

A brief description of adenomatosis of the lungs, is given, and is illustrated by 2 cases studied by the author; in one case the clinical history is included, but the other is restricted to a histological study. It appears that "there are no works on this subject in the Russian literature", although the total number of cases recorded in the world literature up to 1949 was, according to the author, "about 40".

A review of the current theories of causation of pulmonary adenomatosis is given, the author adhering to the view that the neoplastic process arises on the basis of a chronic inflammatory proliferation, and may involve either the alveolar epithelium or that of the bronchial tree, or even the epithelium of the bronchial mucous glands. The first of the cases described belongs to the first category, and the other to the second category.

[A rather dogmatic though informative paper. The photomicrographs are, unfortunately, poorly reproduced.] *A. Swan*

219. **Primary Carcinoma of the Bronchus: Prognosis following Surgical Resection. (A Clinico-pathological Study of 200 Patients)**

J. BORRIE. *Annals of the Royal College of Surgeons of England* [*Ann. roy. Coll. Surg. Engl.*] **10**, 165–186, March, 1952. 6 figs., 5 refs.

[The following conclusions are drawn by the author from an exhaustive statistical analysis of 1,800 cases of primary carcinoma of the lung investigated at the North Regional Chest Surgery Centre, Shotley Bridge Hospital, Newcastle-upon-Tyne, during the period 1933–51, in 45% of which thoracotomy, and in 19% resection, were performed. They are quoted in full from the original.—EDITOR.]

(1) That surgery in the treatment of primary carcinoma of lung, successfully commenced in 1933, is still in its earlier years. Surgical technique is now standardized; but time must elapse before final evaluation of results can be made. (2) That resection for lung cancer, though possible in only 19% of these 1,800 patients, should be continued with increased intensity. (3) That "cures" can be obtained; but that extent of lymph node invasion in the operation specimen cannot yet be taken as a certain criterion for assessing prognosis except to say that: (*a*) 20% of resections are likely to be alive 3 years or more after operation; (*b*) few with several lymph nodes invaded survive long beyond a year; (*c*) where one node only is invaded, *or none*, and the growth is epidermoid in type, early deaths or late survivals may be found—a problem answered only by time. (4) That the lymphatic system offers an important path for dissemination of growth; and, therefore, until more is known about the nature of carcinoma of lung at the time when it can be resected, thorough mediastinal block dissection, as advocated by Brock (*Brit. med. J.*, 1948, **2**, 737) is worthwhile. But lymphatic spread is not the only spread. (5) That due regard must also be paid to the important early bloodstream spread; and, therefore, when resecting lungs for carcinoma, there appears to be every good reason for ligating the pulmonary veins before the pulmonary artery, as advocated by Allison (*Brit. J. Surg.*, 1949, **37**, 1) and Aylwin (*Thorax*, 1951, **6**, 250) of Leeds, in order to prevent further spread from operative handling. (6) That, in the present state of our knowledge, even when surgery is possible, the chance of a cure is still unpredictable. Every patient presenting with primary carcinoma of lung must therefore continue to be viewed as an individual problem, and treated accordingly.

If investigation shows that surgery is indicated and possible, then the operation most suited to the particular needs of that patient at that time should be done, be it radical or palliative to relieve symptoms; careful follow-up of all patients should be rigorously pursued, and further impartial surveys of this vast field of surgery be regularly made in true Hunterian spirit.

220. **The Increase in Bronchial Carcinoma (1895–1950).** (Die Zunahme des Bronchialcarcinoms in einer Sektionsstatistik (1895–1950))

H. LESCHKE. *Virchows Archiv für Pathologische Anatomie und Physiologie* [*Virchows Arch.*] **321**, 101–120, 1952. 8 figs., 18 refs.

A statistical analysis is presented of necropsies performed at a 900-bed Berlin municipal general hospital serving an area of 200,000 inhabitants. Among 37,000 necropsies performed between 1895 and 1950 on subjects over the age of 20, cancer was present in 3,266 males and 2,680 females. Since 90% of all patients dying came to necropsy, the results are considered to represent fairly accurately the incidence in various organs at different ages in the whole population.

Since 1920 there has been a statistically significant increase in incidence of bronchial carcinoma in men, with a corresponding reduction in the incidence of oesophageal and gastric carcinoma. This increase is attributed to the action of an exogenous carcinogenic substance.

The author suggests that the exogenous factor for cancer of the lung operates with equal intensity in both sexes, but that the absence of a corresponding increase in cancer of the lung in women is due to the high incidence of carcinoma of the uterus in the younger age groups. *Bernard Freedman*

See also Radiology, Abstract 90.

PULMONARY TUBERCULOSIS

221. **Bronchial Lymph-node Perforation.** (Bronchial-glandelperforasjoner)

B. VAKSVIK. *Nordisk Medicin* [*Nord. Med.*] **47**, 50–52, Jan. 11, 1952. 1 fig., 16 refs.

Among 735 adult patients who underwent bronchoscopic examination at Glittre Sanatorium, Hakadal, Norway, between 1946 and 1951, definite lymph-node perforation into the bronchi was discovered in 16 cases; some further cases were doubtful. In 26 patients scars were found indicating healed perforations; and in 57 the mucosa was found to be eroded. *W. G. Harding*

222. **Bronchial Tuberculosis in Children.** (Bronchial-tuberkulose hos barn)

K. ROGSTAD. *Nordisk Medicin* [*Nord. Med.*] **47**, 46–50, Jan. 11, 1952. 2 figs., 21 refs.

The author has investigated, by bronchoscopy and thorough radiological examination, 41 children aged between 2 and 14 years, of whom 39 presented the clinical picture of epituberculosis. The site of the lesion was found to be in the right lung in 24 cases, in the left lung in 12 cases, and in both lungs in 3 cases. The upper lobes were involved in 22 cases, the middle lobes in 10, and the lower lobes in 15. There was no case of

tuberculous caseous pneumonia in the series. Bronchoscopy revealed nodal perforation in 6 cases. Inflammatory changes of the bronchial mucosa were found in 25 cases, pus only in 7 cases, and no abnormality in 3. The author recommends conservative treatment, with chemotherapy where specially indicated.

W. G. Harding

223. **Bronchial Fistula following Pneumonectomy and Lobectomy for Tuberculosis.** (Les fistules bronchiques après exérèse pour tuberculose)
A. G. Weiss and P. Hertzog. *Poumon* [*Poumon*] **7**, 559–607, Dec., 1951. 2 figs., bibliography.

In this paper is collated the experience of 20 surgeons in regard to bronchial fistula following resection for tuberculosis. Fistulae are divided into early (occurring within 3 months) and late (occurring after 3 months). Of 363 pneumonectomies, in 64 (18%) fistulae occurred, half of them after the third post-operative month; and of these, 66% were fatal, a mortality of 11·6% (of 363 cases) due to fistula alone. In 330 lobectomies there were 38 (11·5%) fistulae, with 16 deaths (42%)—an over-all mortality of 5%; 8% of the fistulae occurred early and only 4% late. In 84 segmental resections, 5 (6%) fistulae occurred. The formation of fistulae was thus less common after lobectomy than after pneumonectomy, and the danger substantially less after 3 months; they were still less frequent where segmental resection was performed. The incidence of late fistulae in pneumonectomy—one occurred 23 months after operation—emphasizes the need for prolonged and watchful post-operative care.

Fistula formation appears to depend much more on the severity and extent of the lung lesion than on technical considerations, but the importance of flush amputation and avoidance of a bronchial cul-de-sac is stressed. Fistula occurred more commonly on the left than on the right, perhaps for the reason that flush amputation of the left main bronchus is more difficult. Clamps may devitalize the proximal bronchus, as may too much interference with bronchial vessels; pleura should be used to cover the stump, not tissue such as lymph nodes, and care should be taken to divide only through healthy bronchial wall.

The part played by the pleura in fistula formation is discussed: in general, pneumonectomy was found to be less dangerous when combined with total pleurectomy. Thoracoplasty alone, which is regarded as useful in treating fistulae following upper lobectomy, is seldom efficient after pneumonectomy, and thoracotomy with re-amputation followed by thoracoplasty, though dangerous, is considered to offer the best chance of recovery. It is advised that after lower lobectomy the phrenic nerve should not be crushed, since lung is the best prosthesis and its complete re-expansion of paramount importance. Pneumoperitoneum is said to be useful in obliterating a basal dead space without impairing lung and diaphragm functions. Chemotherapy, correction of plasma protein concentration, and proper selection of subjects are regarded as playing vital parts in the avoidance of fistulae.

Geoffrey Flavell

224. **Pneumonectomy in the Treatment of Tuberculosis in Children**
G. M. Botelho, A. Chapchap, H. L. G. Pereira, and O. V. Cordeiro. *Diseases of the Chest* [*Dis. Chest*] **20**, 642–650, Dec., 1951. 16 figs.

In this paper from São Paulo, Brazil, are described the results of pneumonectomy in 4 children suffering from advanced pulmonary tuberculosis of the cirrhotic-atelectatic type (*tísica cirrótico-atelectásia*) of Tapia. The cases are well illustrated by reproductions of radiographs and of photographs of the lung specimens obtained at operation. The patients were 2 white and 2 negro girls between the ages of 8 and 13. In all cases the total atelectasis was due to obstruction of the peripheral bronchi by chronic pneumonitis, secondary bronchiectasis, and active tuberculosis. These are regarded by the authors as indications for pulmonary resection in children.

The general management of the cases is described in detail. Penicillin was used prophylactically in the pleural cavity and around the bronchial stump. Streptomycin and *p*-aminosalicylic acid were used in one case. At operation cyclopropane, ether, and oxygen were administered intratracheally. A postero-lateral incision in the prone position, with resection of the 5th or 6th rib and small paravertebral segments of the ribs above and below, was found to give satisfactory exposure. The bronchial stump was cut high near the carina, and after ligation with cotton sutures was allowed to retract deep into the mediastinum to become covered by areolar connective tissue from the surrounding structures. After phrenic resection—to allow good reduction of the hemithorax space and to prevent over-distension of the contralateral lung—the chest was closed without drainage.

In spite of lack of cooperation from the children with regard to cough, good expectoration was achieved by turning them at least every hour and by early ambulation. Pain was relieved by sedatives. No post-operative complications occurred. Full healing and recovery took place, and no scoliosis has so far been observed.

The authors conclude that the full results of treatment of these cases by partial or total pneumonectomy can be assessed only after the expiration of several years and through a follow-up of larger groups of children similarly treated.

J. Wolf

225. **Lobectomy, Segmental Resection and Pneumonectomy for Tuberculosis (with Reference to 437 Cases of Pulmonary Resection).** [In English]
L. D. Eerland. *Archivum Chirurgicum Neerlandicum* [*Arch. chir. neerl.*] **3**, 253–304, 1951. 59 figs., bibliography.

The author, working in the Surgical Department of the University Clinic of Groningen, reports his experience of 437 cases in which pulmonary resection was performed for pulmonary tuberculosis (164 pneumonectomies, 154 lobectomies, 11 lobectomies combined with segmental resection, and 108 segmental resections).

After a short discussion of previously published series of cases and of the reasons for the decreased mortality

of these operations at the present time, the indications for pulmonary resection in tuberculosis are classified and discussed in detail. Pre-operative treatment, operative technique, and post-operative care are described. The author usually found it necessary to carry out a thoracoplasty, either at the time of operation or later, to prevent excessive distension of the remaining lung tissue.

The post-operative mortality was 2·5% (all the deaths following pneumonectomy), but was only 0·8% for the last 237 cases of the series. On June 1, 1951, 305 of the first 326 patients operated upon were alive. Of these, 284 had negative sputum; 275 were in good condition, 28 only moderately well, and in 2 cases the prognosis was poor; 213 had returned home, and 92 were still in sanatoria; 198 were back at work.

The need for a sufficiently prolonged period of sanatorium treatment following operation is emphasized.

In comparing lobectomy and segmental resection, the author states that more time is needed to determine whether the increased post-operative difficulties of the latter operation are balanced by the better pulmonary function obtained subsequently. *E. Schiller*

226. **The Decline of Artificial Pneumothorax**
W. B. PHAIR. *Canadian Medical Association Journal* [*Canad. med. Ass. J.*] **65**, 542–547, Dec., 1951. 12 refs.

The results of 342 attempts at induction of artificial pneumothorax in 271 patients during the period 1941–5 suggest that the over-all results of this procedure are poor. Death occurred in 84 cases, representing 105 attempts, in 27 of which pneumothorax could not be induced. Of the 84 patients, pneumothorax was abandoned in 57 and carried to a conclusion in 27. In patients still living, 45 of the 237 attempts were not successful, so that the 187 patients represented 192 pneumothoraces; 28 are still receiving refills, in most cases because of inexpandible lung. Of the remaining 164, 47 pneumothoraces (Group A) were discontinued, having served their purpose, and 117 (Group B) were necessarily discontinued before their purpose was attained because of unsatisfactory collapse or severe complications. In Group A the pneumothorax was maintained for an average of 54·2 months, and in Group B for 9·5 months. The average period between cessation of treatment and assessment was 26·9 months in Group A and 63·7 months in Group B. *Kenneth Marsh*

227. **The Laryngeal Swab Specimen in the Cultural Diagnosis of Pulmonary Tuberculosis**
A. R. ARMSTRONG. *Canadian Medical Association Journal* [*Canad. med. Ass. J.*] **65**, 575–578, Dec., 1951. 15 refs.

To assess the relative value of gastric washings and laryngeal swabs in the cultural diagnosis of tuberculosis the author made 967 comparisons between cultures from the two kinds of specimen. For every gastric lavage three laryngeal swabs were taken: these were treated with trisodium phosphate and cultured in oleic-acid–albumen medium. Three laryngeal swabs gave positive cultures almost twice as frequently as one gastric lavage. *Kenneth Marsh*

228. **Medical Treatment of Lung Cavities.** (Medikamentell kaverne-lukking)
S. FROSTAD. *Nordisk Medicin* [*Nord. Med.*] **47**, 52–54, Jan. 11, 1952.

The author discusses the treatment of tuberculous cavities by chemotherapy. He describes 23 cases, 10 of which occurred in lungs which had been previously collapsed; 4 of these cases were cured. The number of cured cases in the whole series was 10 out of 23. The author considers that streptomycin, always used in conjunction with PAS, is a most promising treatment; the addition to these agents of thiosemicarbazone appeared to have little or even an adverse effect. In the author's opinion chemotherapy is a useful adjunct to collapse therapy, but cannot take its place.
W. G. Harding

229. **Primary Tuberculous Pleural Effusion in Older Age Groups**
R. F. ROBERTSON. *British Medical Journal* [*Brit. med. J.*] **1**, 133–136, Jan. 19, 1952. 19 refs.

In order to obtain information as to the frequency and prognosis of primary tuberculous pleural effusion in persons over the age of 40, the author investigated and followed up 58 such persons treated for serous pleural effusion at the Royal Infirmary, Edinburgh, during the 5-year period 1945–9.

Of the 58 patients, 20 are considered to have suffered from a primary tuberculous effusion. After a follow-up of 3 to 6 years, 11 of these patients were alive and well, 4 had died of tuberculosis (2 pulmonary, one miliary, and one pericardial), 3 were alive but suffering from active pulmonary tuberculosis, one was suffering from inactive pulmonary tuberculosis, and one had had a recurrence of the effusion on the other side. The morbidity figure of 45% for this small series compares unfavourably with published figures for younger age groups. The aetiology of these effusions is discussed from the point of view of delayed primary infection, re-activation of an old primary infection, and a "second" primary infection, but no definite conclusions are reached. *R. H. J. Fanthorpe*

230. **The Monaldi Procedure. A Report of Thirty Cases**
W. O. KELLEY and D. V. PECORA. *American Review of Tuberculosis* [*Amer. Rev. Tuberc.*] **65**, 83–87, Jan., 1952. 4 figs., 4 refs.

The authors report 30 patients on whom anterior-stage thoracoplasty and Monaldi drainage with continuous suction were performed for pulmonary tuberculosis with giant cavity at the Connecticut State Sanatorium between 1946 and 1951. The procedure was abandoned in 6 patients, and 7 others died. In none of the remaining 17 has the cavity closed without one or more further operative procedures. The operations employed were postero-lateral thoracoplasty, resection, cavernostomy, and phrenic crush. The average time for which suction drainage was continued was 379 days. The authors state that their best results were obtained with additional postero-lateral thoracoplasty; in 9 patients so treated the disease became inactive. *Bryan P. Moore*

Otorhinolaryngology

231. **Further Observations upon the Diagnosis of Deafness in Young Children, with Particular Reference to the Making of Recommendations for Special Educational Treatment**

M. R. Dix and C. S. Hallpike. *British Medical Journal* [*Brit. med. J.*] **1**, 235–244, Feb. 2, 1952. 4 figs., 7 refs.

The authors review the results obtained by the Otological Research Unit of the Medical Research Council with the peep-show technique for pure-tone audiometry in young children. [The original should be consulted for details of the apparatus and test procedure.] At a preliminary interview the child's intelligence and degree of hearing are roughly assessed, children below the mental age of 3 years, or whose visual acuity or motor function does not reach a certain standard, not being suitable for the test. Psychological and other difficulties may arise in the course of the test, and although the test may take less than 5 minutes, it may be necessary in difficult cases to make repeated observations to arrive at a reliable estimate of the degree of deafness present.

Only after completion of the peep-show test is a complete examination of the ears, nose, and throat carried out to determine the cause of deafness, prognosis, and possibility of relieving it by treatment. With the aid of the audiometric chart obtained by the peep-show technique the usefulness of a hearing aid is considered, and recommendations for special educational treatment are made.

The results obtained in 350 children are discussed. Of the 260 for whom special educational treatment was recommended, 40 were followed up to test the accuracy of the audiometric results and the value of the educational recommendations. The error rate was found to be very low. Examination of the child's speech development as a complement to the examination of the structural and functional hearing mechanism is suggested as a means of enhancing the value of the educational recommendations.

The relationship between pure-tone audiometry and hearing capacity for the spoken voice is discussed, and it is emphasized that this depends essentially on the pathological process producing deafness. In the majority of children, however, the peep-show technique appears to give a satisfactory basis on which valid recommendations may be made to the educational authorities.

G. E. Stein

232. **Nuclear Jaundice and Deafness**

J. Gerrard. *Journal of Laryngology and Otology* [*J. Laryng.*] **66**, 39–46, Jan., 1952. 2 figs., 38 refs.

A report is given of an investigation carried out in Birmingham into the part played by Rh iso-immunization and prematurity in the production of perceptive deafness. The author states that in his experience the incidence of deafness associated with kernicterus is 80% of cases. Of 24 children aged 5 years or more with neurological sequelae to Rh iso-immunization, 22 had a perceptive deafness, one a conductive deafness, and one a normal range of hearing.

The author points out that although kernicterus commonly occurs in association with Rh incompatibility, it may occur independently, and is then usually associated with prematurity. Out of 360 replies to a questionary concerning deaf children, 33 stated that the child had been jaundiced in infancy. These children were visited, blood was taken from child and mother, and the family history inquired into. The blood samples were grouped and the maternal serum was tested for Rh antibodies against Rh-positive and Rh-negative cells suspended in saline and in bovine albumin. Of these 33 children the jaundice in 5 was associated with Rh iso-immunization, and all these children had high-frequency perceptive deafness. This incidence of cases of kernicterus is greater than that in the population at large, which is about 1 in 3,000.

With regard to the incidence of deafness associated with prematurity, the birth weight of the deaf child was known in 181 instances, and in 33 the weight at birth was 5½ lb. (2·5 kg.) or less; that is, 18·3% were born prematurely. In Birmingham as a whole the incidence of premature births is 6·9%.

It has been found on examination that the cochlear nuclei are not infrequently damaged in cases of kernicterus, and the author is of the opinion that it is this lesion which is responsible for the high-frequency perceptive deafness, especially when the dorsal cochlear nuclei are involved, and that the neurological lesion is not due directly to either the jaundice or the Rh iso-immunization *per se*; the high-tone loss is probably acquired during the first week of life. All the children in this investigation were pupils in schools for the deaf.

Arthur G. Wells

233. **Deafness as an Epidemic Disease in Australia. A Note on Census and Institutional Data**

H. O. Lancaster. *British Medical Journal* [*Brit. med. J.*] **2**, 1429–1432, Dec. 15, 1951. 14 refs.

Epidemics of congenital defects, including deafness, among children born in the years 1938–41 in Australia have been reported by workers in various States of that country. The occurrence of such defects has been shown to be associated in some instances with rubella in early pregnancy, but as yet the probability of a defect resulting from a pregnancy during which rubella has occurred has not been established. The present paper gives further indirect evidence of the association between rubella and subsequent congenital deafness. In the Australian censuses of 1911, 1921, and 1933, the sex, year of birth, and number of deaf-mutes were ascertained. The statistics reveal a maximum number of deaf-mutes, at each census and for each sex, at ages corresponding to

births occurring in 1898–1900. A large epidemic of congenital deafness appears to have occurred in 1899, and the literature about the incidence of rubella in Australia suggests a widespread epidemic of that disease in the preceding year.

An analysis of the admissions of deaf persons to institutions in the various States leads to the conclusion that in addition to 1899 and 1938–41, epidemics of deafness also occurred in 1916, 1924, and 1925. In all these epidemic years a preponderance of births of deaf infants occurred in the first half of the year, with a maximum monthly incidence between February and July, whereas in non-epidemic years no material monthly variation was observed. The incidence of rubella in 1923 and 1924 was believed to be unduly high, but no evidence was available on this point for the years immediately preceding the 1916 epidemic of deafness.

In conclusion, therefore, it appears that there is evidence that all epidemics of deafness in Australia since 1861 with one exception—that of 1916—were preceded by epidemics of rubella; and some presumptive evidence that the latter gave rise to the former. If the presumption is correct, then the finding that about a quarter of the admissions of deaf persons to the New South Wales Institution for the Deaf and Dumb between 1861 and 1946 occurred in epidemic years suggests that rather less than 25%—the author suggests 20%—of all admissions were due to epidemic causes.

E. A. Cheeseman

234. **The Value of Puncture of the Mastoid Antrum in Young Children Suffering from Dysentery.** (К вопросу о лечебном значении антральной пункции при отоантритах у детей раннего возраста, больных дизентерией)

A. N. Linshits. *Вестник Ото-рино-ларнигологии* [*Vestn. Oto-rino-laring.*] **13**, 26–29, No. 6, 1951. 14 refs.

The author states that in the majority of cases of otitis media associated with dysentery in young children clinical and necropsy findings indicate that the ear disease is secondary, and that operation on the mastoid, even in cases in which the toxaemia is predominantly otogenous, fails to remove the signs of general intoxication. In view of the patient's lowered immunity he therefore advocates caution in carrying out mastoid antrotomy, even in the rare case where the aural disease is primary, and prefers to perform puncture of the mastoid antrum, repeated up to 3 or 4 times. He reports 165 bilateral antral punctures on 95 children whose ages ranged from 1 to 22 months. The severe toxic forms were present in 71·6% of the patients, and the average mortality was 32·6%.

The absolute indications for puncture of the mastoid antrum are stated as follows: (1) auroscopic signs and general symptoms indicating that aural or mastoid disease is the sole or major toxic factor; (2) redness and bulging of the tympanic membrane, hyperaemia of the upper posterior meatal wall, and profuse suppuration; (3) mucopurulent or purulent discharge on myringotomy; (4) temporary improvement following myringotomy or spontaneous rupture of the tympanic membrane; and (5) if mastoiditis appears to be the main cause of meningism or cranial nerve lesions. Antrotomy should, on the other hand, be performed: (1) if softened bone is found on antral puncture; (2) if only temporary improvement follows 3 or 4 punctures; or (3) if, in the presence of prolonged and profuse suppuration, the general condition continues to worsen, the paediatrician can offer no explanation, and antral puncture gives no improvement.

Stephen Suggit

235. **The Classification and Treatment of Otogenous Meningitis.** (К вопросу о классификации и лечении отогенных менингитов)

I. I. Sherbatov. *Вестник Ото-рино-ларингологии* [*Vestn. Oto-rino-laring.*] **13**, 17–20, No. 6, 1951. 1 ref.

During the period 1945–9, 53 cases of meningitis, 50 of them otogenous and 3 rhinogenous, were admitted to the Otorhinolaryngological Clinic of the Moscow Medical Institute. In the same period the total number of operations for inflammation of the middle ear was 856. Meningitis followed acute otitis media in 21 cases (12 deaths), and chronic otitis media in 29 (4 deaths).

Otogenous meningitis occurred in five types: (1) a very severe fulminating form in acute otitis media; (2) pneumococcal meningitis; (3) meningitis combined with other intracranial lesions (sinus thrombosis, cerebral or cerebellar abscess); (4) post-operative meningitis; and (5) relapsing meningitis. All 5 patients with Type 1 died, and in most of them the causal organism was not found in the cerebrospinal fluid. Out of 10 patients with Type 2, 3 survived: this type occurred both in an acute form and as a chronic infection without frank suppuration. Pneumococci were always found in the cerebrospinal fluid. Meningitis occurred together with lateral sinus thrombosis in 5 patients, of whom 3 survived. There were 6 cases of post-operative meningitis (3 acute otitis media, 3 chronic otitis media), in all of which the patient survived. There were 5 patients with relapsing meningitis, of whom 3 survived: Incorrect dosage of sulphonamides or antibiotics and lack of sensitivity of the organisms to these agents were largely responsible for the relapses.

Immediate operation is advocated in the treatment of otogenous meningitis—simple or radical mastoidectomy according to the type of disease In the cases described the dura mater of the middle and posterior cranial fossae was always exposed, and 50,000 to 80,000 units of penicillin were given every 3 hours. For the first few days lumbar puncture was performed daily, and subsequently at longer intervals. Intrathecal penicillin (30,000 to 40,000 units daily) was given, but did not always exert a favourable influence. In a few cases sub-occipital puncture was performed, but without any marked influence on the disease. In addition, sulphathiazole or sulphadiazine, 6 to 8 g. a day, was given.

Meningitis occurred more frequently in cases of chronic otitis media, but the mortality was higher in those of acute otitis media. Fulminating and pneumococcal meningitis gave the worst prognosis. Of the whole series of 53 patients, 37 survived and 16 died.

Stephen Suggit

Urology

KIDNEY

236. **The Treatment of Nephrolithiasis by Increasing the Urinary Content of Protective Colloids by Means of Hyaluronidase.** (Traitement médical de la lithiase rénale en provoquant l'accroissement des colloïdes protecteurs urinaires par l'hyaluronidase)
A. J. BUTT, E. A. HAUSER, and V. TRAINA. *Presse Médicale* [*Pr. méd.*] **60**, 106–108, Jan. 23, 1952. 9 figs., 15 refs.

In the present unsatisfactory state of the medical treatment of renal stone little attention has been paid to the protective role of the colloids in the urine. Urine is a highly saturated solution of considerable complexity, in which the electrolytes as well as the non-electrolytic elements are kept in solution in spite of being in a concentration above their normal solubility in water. This is due to the presence, in a normal healthy person, of colloids which act to prevent the precipitation, agglomeration, and conglomeration of crystalloids. It follows that if the concentration of such protective colloids is diminished or removed the deposition of salts in the urine is favoured, with the setting-up of centres of crystallization and consequent formation of calculi. The incidence of renal stone has in fact been found by the present authors to be inversely proportional to the degree of protection afforded by these urinary colloids.

During an investigation carried out in Florida into the colloidal activity of the urine in sick persons of both sexes (excluding those with haematuria, albuminuria, or urinary infections) the authors examined 680 specimens of urine with the ultramicroscope. Some interesting facts were elicited regarding the influence of sex and race in the formation of protective colloids; it would appear, for example, that the negro races have a higher normal concentration of these colloids, and are therefore less liable to stone formation; further, that the urine of women generally shows a higher concentration than that of men, and pregnant women greater than non-pregnant—a fortunate provision at a time when the liability to urinary infection and consequent formation of stones is increased.

The action of these protective colloids is demonstrated in an instructive series of photomicrographs, and the fact established that the enzyme hyaluronidase not only appreciably reduces surface tension but, if mixed with physiological saline and injected subcutaneously, will disperse the minute particles suspended in the urine, and should thus prevent the formation of calculi. This it does by inducing the natural colloids of the urine, and the protective colloids which are physiologically increased in quantity by its presence, to form a gel, thereby preventing the crystallization of the electrolytes present.

In the clinical application of these findings, 11 cases were studied of patients with multiple bilateral and rapidly reforming renal calculi, great numbers of which had been eliminated at fairly regular intervals over many years, and fresh calculi elaborated every few weeks. In all these cases other therapeutic measures had proved ineffective. The hyaluronidase injections were regulated according to the increased rate of colloidal activity, as observed by ultramicroscopy after the injections. A résumé is given of 4 of these cases which were treated with hyaluronidase over a period of 9 to 12 months, and examined radiographically every month. During the whole period of treatment no new stone formation and no increase in the size of existing stones were observed, and a high concentration of protective colloids was maintained. *D. P. McDonald*

237. **Observations on the Dynamics of Acute Urinary Retention in the Dog**
J. D. LAWSON and W. B. TOMLINSON. *Journal of Urology* [*J. Urol.*] **66**, 678–685, Nov., 1951. 5 figs., 19 refs.

238. **The Pathogenesis of Acute Renal Failure Associated with Traumatic and Toxic Injury. Renal Ischemia, Nephrotoxic Damage and the Ischemuric Episode**
J. OLIVER, M. MACDOWELL, and A. TRACEY. *Journal of Clinical Investigation* [*J. clin. Invest.*] **30**, 1307–1439, Part I, Dec., 1951. 53 figs., 32 refs.

239. **The Problem of Calyceal Diverticulum**
H. R. NEWMAN, R. M. LOWMAN, and L. L. WATERS. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 77–82, Jan., 1952. 3 figs., 13 refs.

240. **A Review of 42 cases of Hypernephroma.** (Über 42 Fälle von sog. hypernephroiden, malignen Tumoren der Nieren)
S. LENKEI. *Helvetica Medica Acta* [*Helv. med. Acta*] **18**, 632–648, Dec., 1951. 2 figs., 31 refs.

This is a thorough study of the symptoms and signs, the diagnosis, histopathology, and treatment of 42 cases of hypernephroma observed at the medical clinic of Zürich University between 1930 and 1950. Of these cases 36 were proved to be of hypernephroma either at necropsy or by biopsy, and in the remaining 6 patients the diagnosis was made on clinical grounds only; 26 of the patients were male and 16 were female; 19 cases (45% of the total) occurred between the ages of 60 and 70, 12 patients were between 40 and 60 years old, 10 were over 70, and one case was observed in a patient aged 19. Both sides were affected with equal frequency.

The symptoms were loss of weight in 60%, pain in 50%, undue fatigue in 45%, haematuria in 25%, pyrexia in 10%, and local swelling in 8% of the cases under review; symptoms were present for 2 to 14 months before

medical advice was sought. Cachexia was observed in 44%, dyspnoea in 32%, tachycardia in 40%, oedema in 27%, ascites in 2%, pyrexia in 40%, and a local swelling in 40% of the cases. Urine findings were not characteristic. In 19 patients there was albuminuria, and in 12 patients the tests for urobilin or urobilinogen were positive. In only 25 cases were erythrocytes demonstrable in the urinary deposit; [this is not surprising as haematuria is characteristically paroxysmal in hypernephroma.] The urea concentration test gave mostly normal results. Morphological and biochemical examination of the blood revealed no feature pathognomonic of hypernephroma.

In 21 patients instrumental or excretion pyelograms were obtained; in 15 of these a diagnosis of a renal tumour could be made by demonstrating one or more of the following features: gross enlargement of the kidney; displacement, dilatation of the renal pelvis with or without filling defects; distortion of the outline of the calyces. In 25 patients secondary deposits could be ascertained by clinical examination. In 18 cases the seat of the metastases was the lung, in 11 cases bones (vertebrae, ribs, sternum, sacrum, humerus), and in 8 cases the liver; a solitary metastasis was found 4 times in the brain, and in the pericardium and in the pouch of Douglas once each.

The treatment of choice is nephrectomy, unless contraindicated by the patient's general condition; of 8 patients who underwent this operation only 3 were alive after 3½ years.

[Perusal of the original paper will be well worth while for those interested in hypernephroma.] *N. Alders*

241. **Biopsy of the Kidney for Suspected Neoplasm**
H. M. Weyrauch, H. L. Wanless, J. L. Goebel, and K. G. Scott. *Journal of Urology* [*J. Urol.*] **67**, 60–85, Jan., 1952. 19 figs., 21 refs.

When, after detailed urological study, renal neoplasm is suspected, unless there is very definite evidence at operation of a simple lesion such as a cyst, nephrectomy is the accepted treatment. No doubt many kidneys have been sacrificed for innocent lesions. The authors believe that the best answer to this problem is the same for the kidney as for other organs, namely, biopsy. Quoting from the literature they argue that there is no evidence to show that the incidence of metastases is increased thereby. Experimentally, they have shown that when a kidney is mobilized surgically and the renal pedicle and ureter clamped, no escape of a preparation of radioactive chromic phosphate occurred after direct injection into the kidney substance. Renal biopsy is not recommended in cases in which malignant cells have been demonstrated in the urine, or where the kidney is functionless or obviously the site of malignant disease. Nor is it to be recommended in cases of unexplained unilateral renal haematuria with a normal pyelogram; operative search of the kidney in such cases is usually fruitless. Biopsy is of greatest value in cases where definite pyelographic deformity has been demonstrated but in which the diagnosis of malignant disease is not certain. The underlying lesion present might equally well be a cyst, localized infection, simple tumour, congenital anomaly, or trauma.

By traction on Gerota's fascia the kidney can be delivered with very little manipulation. The ureter is then occluded by a rubber-covered clamp and the pedicle by a rubber catheter used as a tourniquet, which should be applied as near to the kidney as possible, leaving plenty of pedicle free for nephrectomy clamps to be applied on the aortic side of the tourniquet if necessary. The rubber tourniquet is to be preferred to a clamp, as the pedicle is so thick that with a clamp some small lymphatic vessels may not be entirely occluded. After carefully protecting the wound with gauze, the suspected area of the kidney is incised in Brodel's line. The diagnosis of malignant growth may well be obvious from this incision alone; if not, frozen sections are made. If the diagnosis of carcinoma is confirmed the pedicle is clamped on the aortic side of the tourniquet and nephrectomy is performed. In simple lesions, partial nephrectomy is carried out. Details of 6 cases are reported. In 5 a benign lesion was found and the kidney saved. In the sixth carcinoma was confirmed and nephrectomy carried out.
Thomas Moore

242. **Practical Control of Fluid and Electrolyte Balance in Carbon Tetrachloride Nephrosis. Report of Cases**
R. C. Partenheimer and D. S. Citron. *Archives of Internal Medicine* [*Arch. intern. Med.*] **89**, 216–233, Feb., 1952. 6 figs., 22 refs.

MALE GENITALIA

243. **The Treatment of Obstructive Azoospermia.** (Tratamiento de las azoospermias obstructivas)
A. Trabucco. *Minerva Urologica* [*Minerva urol., Torino*] **3**, 200–210, Dec., 1951. 8 figs., 6 refs.

The successful treatment of azoospermia depends on the functional efficiency of the testis, the epididymis, and the vas deferens. The author is strongly of the opinion that testicular biopsy should always be performed in such cases, and he describes four degrees of degeneration which may be distinguished by this means: (1) in which there is a moderate diminution of spermatozoa present; (2) with diminution of the spermatids, although spermatocytes are present; (3) where only spermatogonia are to be seen; and (4) where there is complete absence of structure. The only reliable method of estimating the patency of the vas is by insufflation, the vas being exposed for this purpose through a small incision, and an apparatus has been devised by the author which records kymographically the pressures obtained. The results obtained are classified as: (*a*) normal—a sudden rise in pressure, followed by a gentle and gradual descent; (*b*) permanent obstruction—the pressure remains elevated, producing a series of plateaux; or (*c*) reducible obstruction—the tracing being a composite of (*a*) and (*b*). In cases of obstruction with normal spermatogenesis the author performs the operation of lateral intra-epididymal epididymo-vasal anastomosis, the operation being preceded by gonadotrophin treatment (400 i.u. daily) for 45

days, and followed by the administration of gonadotrophin, ascorbic acid, and α-tocopherol. Out of 62 cases so treated a successful result was obtained in 41, but in the author's opinion this high percentage of successes is not due to the operative technique so much as to the conscientious preliminary investigation and the thorough pre- and post-operative treatment. In 29 of the 41 cases in which the obstruction was relieved the operation was followed by fecundation. *S. M. Vassallo*

244. **Electron Microscopy of the Human Spermatozoon.** (Le spermatozoïde humain au microscope électronique) H. Bayle and M. Bessis. *Presse Médicale* [*Pr. méd.*] **59**, 1770–1771, Dec. 25, 1951. 7 figs., 9 refs.

The head of the human spermatozoon is the most difficult part to study because of its thickness, but after the use of special technique numerous granules have been seen inside it. The middle piece is also too thick to give easily interpretable images, but two closely coiled spirals about 170 millimicrons (mμ) in thickness can be distinguished. In the interior of these spirals are 8 to 9 fibrils. They extend all along the tail and constitute the terminal filament. The tail furnishes good images, especially after shadowing. It consists of a sheath composed of helicoidal fibres, which are clearly visible after digestion of the outer envelope. When the tail is broken a bundle of fibrils can be seen emerging from the sheath. There are 9 to 12 of these, but it is uncertain whether the larger number is due to splitting. The terminal filament is composed of the naked fibrils, which are sometimes fused together. More usually these fibrils, which are 1 to 2 μ in length and 50 to 60 mμ in diameter, are arranged in a bunch. Under certain conditions they can be distinguished under the ordinary microscope.

R. J. Ludford

245. **Seminal Fructose Concentration as an Index of Androgenic Activity in Man**
R. L. Landau and R. Loughead. *Journal of Clinical Endocrinology* [*J. clin. Endocrinol.*] **11**, 1411–1424, Dec., 1951. 5 figs., 10 refs.

In experiments carried out at the University of Chicago specimens of semen from 5 eunuchoid patients were tested for reducing sugar before and during treatment with androgen or chorionic gonadotrophin. The 4 patients given methyltestosterone (10 to 50 mg. daily) had a seminal fructose concentration of 135 mg. per 100 ml. or less before treatment, and this rose to 400 to 800 mg. per 100 ml. during treatment. There was usually a correlation between dosage and seminal fructose concentration, though individual sensitivity varied: a dosage of 10 mg. daily had almost no effect on one patient and maximal effect on another. Interruption of treatment resulted in a return to the initial fructose concentration. The fifth patient produced an ejaculate of only 0·1 ml., the fructose concentration of which was approximately normal, but after several weeks of treatment with chorionic gonadotrophin (500 i.u. thrice weekly), ejaculation was more profuse and the fructose concentration was doubled.

The fructose concentration in 24 samples of semen from 21 normal men ranged between 228 and 807 mg. per 100 ml., and similar values were obtained from men with impaired spermatogenesis, oligospermia, or azoospermia, but without any signs of androgen deficiency. There is great variation between the concentrations found in different individuals, but the values are relatively constant in samples taken from the same individual at different times. *Peter C. Williams*

246. **Late Results of Perurethral Prostatic Resection**
T. L. Chapman and J. W. Sutherland. *British Medical Journal* [*Brit. med. J.*] **1**, 72–75, Jan. 12, 1952. 11 refs.

Many urologists reserve perurethral prostatic resection for the treatment of fibrous or malignant glands and so-called "bad-risk" cases, believing that the functional results in general are inferior to those of an enucleation operation. The present authors point out, however, that with experience excellent late results may be obtained when this method is applied as a routine procedure to patients suffering from prostatic obstruction. Despite recent advances and refinements in open prostatic surgery, they maintain that it is still better to leave the abdominal wall intact and, while stressing the low operative risk of perurethral resection, urge their view that the incidence of recurrent obstruction and late complications has been exaggerated.

In a recent series of over 400 patients with prostatic disease requiring operative treatment, over 90% were treated by perurethral resection with a mortality rate of 3·25%. Against this background (indicating the extent to which perurethral methods have been employed) the late results of 461 cases are considered, representing all patients surviving more than a year after operation out of a comprehensive series of 497 whom it was possible to trace. Of these, 395 were operated upon for nodular hyperplasia, 31 for median-bar obstruction, and 35 for prostatic carcinoma. The duration of follow-up extended from 1 to over 13 years. Among the eventual causes of death (in 108 cases) were urinary infection or uraemia in 9 cases and secondary carcinoma in 5; the other deaths were unrelated to the urinary tract and due to what are generally regarded as natural causes.

Throughout the period of observation most patients were well pleased with the function of the bladder, and the results, as judged by day and night frequency, force and control of flow, and the effect on general health, are described as excellent. In any case of doubt bacteriological examination of the urine, intravenous pyelography, and endoscopic examination were repeated. The authors point out that the incidence of recurrent prostatic obstruction is much less than is commonly supposed, amounting in their series to just over 5%, and that should it occur it may be dealt with expeditiously by the same technique. They adduce evidence to show that a reduction in the incidence of recurrent obstruction (to 2%) in cases treated over the last 5 years has been due as much to increasing experience (resections of 50 g. of tissue are faily common) as to the shorter period of follow-up. The results, in any case, clearly demonstrate the value of the operation in patients whose natural expectation of life is short.

Other complications were also relatively uncommon, the incidence of post-operative stricture amounting to less than 2%, while urinary incontinence occurred in 7 patients, of whom 3 were suffering from carcinoma and were incontinent before the operation. Closer analysis suggests that the operation failed to relieve incontinence in 5 cases and was the cause of the complication in 2.

In general, the results suggest that the complications of perurethral prostatic resection have been exaggerated, and that in experienced hands the method merits a wider application in the sphere of prostatic surgery.

J. D. Fergusson

247. **Suprapubic Transvesical Prostatectomy with Primary Closure of the Bladder Using Oxidized Cellulose: an Analysis of 100 Cases**

R. C. THUMANN and G. D. STUMP. *Journal of Urology* [*J. Urol.*] **67**, 95–100, Jan., 1952. 1 fig., 8 refs.

In 100 cases of suprapubic transvesical prostatectomy performed by the authors, haemostasis was obtained by the use of oxidized cellulose wrapped round the distended bag of a Foley catheter and drawn down to fit snugly into the prostatic cavity. After 24 hours the bag was deflated and most of the cellulose soon disintegrated and drained away. The catheter was usually removed 6 days after operation.

The results show that the average post-operative stay in hospital was 11 days, and the mortality 2%. Epididymitis occurred in 1% of cases, and some degree of urinary sepsis in 3%. No case of uraemia was seen. Permanent incontinence resulted in one case; in 4 cases thrombophlebitis occurred and one patient died from pulmonary infarct. Wound complications were few; haematoma occurred in one case and mild sepsis in one case. In 17% of the cases some urinary leakage occurred from the wound.

The results are compared with those in other series of open suprapubic transvesical prostatectomy performed before and after antibiotics came into general use, and with those of transurethral resection performed during the same periods. In the closed method of prostatectomy described the results were better from every point of view, but particularly in regard to the low incidence of respiratory and cardiovascular complications.

Thomas Moore

248. **Evaluation of Oxycel-bag Catheter Technique in Suprapubic Prostatectomy**

W. J. BAKER and E. C. GRAF. *Journal of Urology* [*J. Urol.*] **67**, 101–105, Jan., 1952. 11 refs.

The authors, from St. Luke's Hospital, Chicago, describe their experience in the control of haemorrhage in 100 cases of suprapubic prostatectomy, 50 of which were treated by the older packing method and 50 with the new bag-catheter technique. In their method a single layer of "oxycel" (oxidized cellulose) was draped about the bag of the catheter, and the bag was then inflated with sterile water and drawn into the prostatic cavity. Tension on the bag may sometimes be necessary, but was not used by the authors. A suprapubic tube was put into the bladder. The catheter was removed after 24 hours. The sinus took 15½ days to close with this technique and 18 days with the old technique. It is stated that the bleeding was less; the need for painful removal of the packing is done away with, and with it the need for a possible second anaesthetic. There was a marked decrease in post-operative infection. One calculus was reported following oxycel. Bladder spasm may be relieved by deflating the bag.

K. H. Taylor

249. **Mortality of Various Methods of Prostatectomy**

J. E. BYRNE. *Journal of Urology* [*J. Urol.*] **67**, 121–125, Jan., 1952. 6 refs.

The author reviews the causes of death in 347 patients who underwent prostatectomy at St. Mary's Hospital, University of St. Louis, during the last 10 years; 147 patients were admitted with acute retention, and a large percentage had evidence of cardiovascular disease of varying degree. The average age of the entire group was 67·8 years. Methods used were: transurethral, using the Stern–McCarthy instrument, 202 cases (58·2%); one-stage suprapubic, 62 cases (17·8%); the remaining 24% consisted of 81 two-stage suprapubic operations and 2 perineal operations. Spinal anaesthesia was used in 83·5% of cases.

The average post-operative hospital stay was 14·2 days for transurethral operations, 21 days for suprapubic (one-stage), and 34·2 days for two-stage operations. There were 20 deaths in this series, 11 (5·4%) after transurethral resection, 4 (6·4%) after one-stage suprapubic, and 5 (7·4%) after two-stage suprapubic operation. The author divides the causes of death into two groups: (1) severe haemorrhage, 4 deaths; (2) other causes, such as embolus, heart failure, septicaemia, and pneumonia, 16 deaths. Among minor complications were 20 cases of post-operative epididymitis, all in cases in which the vas was not ligated.

K. H. Taylor

250. **The Incidence of Carcinoma following Prostatectomy.** (Cancerrecidiv efter prostatektomi)

G. BAKALIM. *Nordisk Medicin* [*Nord. Med.*] **47**, 209–212, Nov. 15, 1951. 1 fig., 6 refs.

The records of 258 patients who had undergone suprapubic transvesical prostatectomy (Freyer's method) for hypertrophy of the gland during the years 1938–49 were examined. Of 184 patients who were available for follow-up, 16 (8·7%) were found to have carcinoma of the prostatic remnant. This percentage is in good agreement with that found by other authors.

[The original title of this paper is perhaps somewhat ambiguous, as the author deals not with the recurrence of cancer but with the appearance of cancer in regenerated parts of the prostate after prostatectomy for hypertrophy. He admits that in some of the remnants removed carcinoma was discovered only on histological examination.]

L. Michaelis

251. **Retropubic Prostatectomy and Inguinal Hernia Repair**

L. W. RIBA and W. H. MEHN. *Journal of Urology* [*J. Urol.*] **67**, 106–116, Jan., 1952. 9 figs., 18 refs.

Endocrinology

252. **The Influence of Oestrogenic Hormones on the Prostate. Oestrogenic Reactions in the Human Prostate after Artificial Hormone Administration, in the Normal Human Prostate at Birth and in Cases of Senile Hyperplasia of the Prostate.** [In English]
A. H. I. JAKOBSEN. *Acta Pathologica et Microbiologica Scandinavica* [*Acta path. microbiol. scand.*] **29**, 419–425, 1951. 4 figs., 9 refs.

It has been established that the administration of oestrogens induces squamous metaplasia, hyperplasia, and atrophy of the prostatic epithelium. Similar changes in the foetus are probably due to maternal oestrogen during the latter half of pregnancy. In the present study of 50 cases of ordinary senile prostatic hyperplasia and 25 " normal " senile prostate glands without nodules, from men between the ages of 60 and 88 years, 10 glands showed the above changes. All these were from cases of hyperplasia. The author concludes that this supports the theory that the action of oestrogen is an important aetiological factor in hyperplasia of the prostate.
Norval Taylor

EXPERIMENTAL ENDOCRINOLOGY

253. **The Modification of Leukocytic Function in Human Windows by ACTH**
J. W. REBUCK, R. W. SMITH, and R. R. MARGULIS. *Gastroenterology* [*Gastroenterology*] **19**, 644–657, Dec., 1951. 6 figs., bibliography.

The technique used in this investigation of the cytology of acute inflammation was to scrape a small area of skin and then to apply an antigen to the denuded surface, finally overlaying this lesion with a small glass cover-slip. After about 30 minutes a sample of the exudative cells migrates to the under surface of the cover-slip, which is then removed and stained like an aspirated sample of bone marrow. The addition of particulate or colloidal substances to the surface of the wound gives an indication of the phagocytic activity of the cells. This technique, using typhoid vaccine, egg-white, diphtheria toxoid, or old tuberculin as antigens, was applied in 11 normal subjects and in 11 subjects suffering from a variety of disorders, before and during treatment with corticotrophin.

The cytology of the inflammatory exudate was studied at frequent intervals up to 24 hours. In general, the usual pattern found, both in the normal subjects and in the patients, was as follows: up to about 8 hours the predominant cells were neutrophil leucocytes, accompanied by a few histiocytes; between 8 and 12 hours lymphocytes appeared, at first with a small amount of cytoplasm only, but during the next 3 hours they appeared to increase in size and contain more cytoplasm. Between 16 and 24 hours the predominant cells were histiocytes. The most obvious difference between the control and pre-treatment findings on the one hand and findings obtained during corticotrophin therapy on the other was that in the latter case lymphocytes failed to appear, with subsequent failure of development of the histiocytic cell mass towards the end of the 24 hours. In a few subjects where phagocytosis was studied it was found to be depressed, not only in regard to neutrophil leucocytes but also to the later large lymphocytes, at the period of about 18 hours.

The authors conclude that if the antigen is avirulent, then inhibition of the local inflammatory response might conceivably protect delicate vital structures from the locally destructive action of inflammatory exudation. However, it would appear that most of the results of adreno-cortical over-activity on the local inflammatory responses are detrimental, particularly if the antigen is capable of reproduction.
G. A. Smart

254. **Effect of ACTH upon Gastric Secretion**
S. J. GRAY, J. A. BENSON, and R. W. REIFENSTEIN. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **78**, 338–342, Oct., 1951. 9 refs.

Corticotrophin (100 to 160 mg. intramuscularly) was given to 7 subjects daily for 3 to 4 weeks. The basal secretions of hydrochloric acid and pepsin from the stomach were approximately doubled during the latter part of the administration. The authors deduce from this evidence that an endocrine relationship exists between the stomach and the adrenal gland, and that a hormonal phase of gastric secretion may be mediated by the adrenal corticoids.
John R. Vane

255. **Influence of Cortisone upon Acute Inflammation**
V. H. MOON and G. A. TERSHAKOVEC. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **79**, 63–65, Jan., 1952. 10 refs.

The effect of cortisone on acute inflammation has been studied by the authors. Lesions were produced in guinea-pigs by application of solidified carbon dioxide or of water at 95° C. to the skin. The inflammatory reaction was studied at 1 hour, 6 hours, and at 24 hours after the thermal trauma. In all, 60 lesions were studied in each of the treated and control groups. The treated animals received 10 mg. of cortisone acetate on the day before and on the day of experiment. The lesions produced by freezing were of maximum intensity at 6 hours, but heat-produced lesions progressed after this period.

Since an acute inflammatory lesion is characterized by certain constant features, the degree of each such feature was assessed quantitatively and compared in the experimental and control groups. It was clearly shown that hyperaemia, diapedesis, oedema, and leucocytic infiltration were reduced at all stages of the lesions in the

cortisone-treated group. Reduction of oedema and diapedesis were the most marked features. It is assumed that this is due to increased capillary resistance with reduced permeability, which is a known effect of cortisone therapy. Reviewing the experimental and clinical literature the authors find themselves in agreement with most other authors in this field. *J. N. Harris-Jones*

256. **The Growth and Histologic Changes of Human Thyroidal Tumors Transplanted into the Anterior Chamber of the Eyes of Guinea Pigs**

B. M. DOBYNS and B. LENNON. *Journal of Clinical Endocrinology* [*J. clin. Endocrinol.*] **11**, 1481–1494, Dec., 1951. 17 figs., 7 refs.

The results of experiments performed at Harvard Medical School in which fragments of 23 thyroid tumours and of 3 normal glands were transplanted into the anterior chamber of guinea-pigs' eyes are analysed. The tumours were those which rapid examination of frozen sections suggested would be difficult to classify morphologically as benign or malignant. Grafts were placed in a total of 218 eyes and left in place for 18 to 827 days before histological study; survival for more than 90 days was considered significant of malignancy.

Normal thyroid tissue was usually absorbed rapidly, but a few transplants still contained recognizable acini after 93 days—the cells were, however, shrunken and seemed unlikely to survive much longer. Most of the grafts from highly malignant tumours survived, and grew in some eyes after a latent period of several months. Grafts from hyperplastic adenomata removed from thyrotoxic patients did not survive, nor did fragments of a Hürthle-cell adenoma. The survival for longer than 90 days of tumour cells from 2 foetal adenomata suggested malignancy, although 6 pathologists independently made a diagnosis of non-malignancy on morphological grounds. Grafts from papillary adenocarcinomata and from metastases of follicular adenocarcinomata usually survived; calcification of the graft was particularly common with the former type of tumour. Tumour grafts have some capacity for differentiation within the anterior chamber, and one particularly anaplastic tumour which was passed through 9 generations of re-transplantation underwent a variety of morphological changes (which are illustrated): the tumour ultimately survived longer than it would have done in the patient.

It is concluded that anterior-chamber transplantation is a useful experimental method, but is not yet a certain method of distinguishing benign from malignant tumours.

Peter C. Williams

257. **Studies of the Human Thyroid Function Measured by Radio-iodine, and its Relation to the Basal Metabolic Rate**

M. REISS, C. P. HAIGH, R. E. HEMPHILL, R. MAGGS, J. M. REISS, and S. SMITH. *Journal of Endocrinology* [*J. Endocrinol.*] **8**, 1–10, Jan., 1952. 6 figs., 8 refs.

With a view to studying thyroid function in cases where the deviation from normal is too small to be detectable by the usual clinical and laboratory examinations, the authors have used the uptake and excretion of radioactive iodine to obtain an arbitrary index; 2 μc. of carrier-free ^{131}I was given intravenously to over 500 patients in Bristol Mental Hospitals, and the thyroid uptake during the next hour was measured. A Geiger counter, as a rate-counting meter with an integrating time constant of 40 seconds, was used, and uptake curves constructed with a recording milliammeter, as the absolute measurement of radioactive iodine was found to be inaccurate. The patients' urine was collected for the next 60 hours. [For details of the calculation reference to the original should be made.] Unavoidable errors arise in giving the injection and in the collection of urine, and both cause a rise in the index. Creatinine estimations on 24-hour urine specimens were performed as an approximate control; the experimental error was estimated at not more than $\pm 20\%$. The basal metabolic rate was estimated in some patients, thiopentone being used to produce complete relaxation. Controls from the hospital staff and mentally normal patients with abnormal thyroid function were studied for comparison.

The results for men and women were so different that they were kept separate. The authors admit that they had difficulty in defining the limits of normality for their index, and think these may still be too widely spaced. In most cases there was agreement between the basal metabolic rate and the index calculated, but the wide divergence in some is given as evidence for under- or over-sensitivity of the tissues to thyroid hormone. Further work is to be published on this. It can be appreciated that a particular organ may be under-sensitive to thyroid, and a local myxoedema occur in a thyrotoxic patient. Reduced sensitivity of different tissues may be a cause for hyperactivity of the thyroid, either directly or through the anterior lobe of the pituitary gland. Causes for reduced or increased sensitivity are not known, but are assumed to be circulatory in origin. The authors have had encouraging results with vasodilator drugs in schizophrenic patients. *R. St. J. Buxton*

THYROID GLAND

258. **Recurrent Goitre and Prophylactic Iodine.** (Recidivstruma und Jodprophylaxe)

M. RICHARD. *Helvetica Chirurgica Acta* [*Helv. chir. Acta*] **18**, 505–516, Dec., 1951. 3 figs., 7 refs.

The author has investigated recurrent goitre as seen at the Municipal Hospital, Rorschach, which receives patients from an area containing one-ninth of the population of Switzerland and at which one-third of all goitre operations in the country are performed. Of the recurrent cases seen, 56% were pseudo-recurrences which had been operated upon on one side only on an earlier occasion. Recurrent goitre is biologically and histologically identical with the primary lesion, and has the same geographical distribution. The sex incidence was 5 females to 1 male, as opposed to a 4 to 1 ratio for first operation. In this part of the country 6 to 7% of the population undergo thyroidectomy, and 5·9% of these have recurrences. These figures compare favourably with those from 11 other hospitals in the region.

In view of the nature of recurrences, similar prophylactic measures as are taken in primary goitre should be effective. General hygienic measures, correction of avitaminosis (particularly of vitamin A), and iodization of salt are of value. In spite of the iodization of salt, the daily uptake of iodine was only 88 to 107 μg. instead of the estimated daily minimum requirement of 200 μg. Despite this, the incidence of goitre has decreased. In the St. Gallen region, for example, neonatal goitre has practically disappeared, whereas in 1921–2 100% of children had goitres with an average weight of 22·1 g. In country children goitre was 5 to 6 times as frequent as in town children. Similarly in 1921–2 64·4 to 70% of Swiss army recruits were rejected on account of goitre; during the period 1944–7 only 1·2% were rejected for this reason.

Recurrences are most common in patients operated on before the age of 20 years. The highest incidence of recurrence occurs 15 to 20 years after the original operation. The average age at operation for recurrence was 44·8 years, and at the primary operation it was 37·4 years. During the period 1931–50, 5,600 thyroidectomies were performed, 15 (0·26%) of these being for recurrent goitre. The author considers this to be due mainly to the daily administration of 172 to 221 μg. iodine. He states that the addition of 20 mg. of potassium iodide to each kg. of table salt, giving 200 to 280 μg. of iodine daily, is harmless; toxic symptoms begin to occur only when the daily intake reaches 500 to 1,000 μg. In the absence of post-operative toxic manifestations, iodine therapy is recommenced 6 to 12 months after operation.

A. G. Ellerker

259. **The Results of Investigation of 85 Cases of Carcinoma of the Thyroid with Radioactive Iodine.** (Résultats de l'exploration de 85 cas de cancers de la thyroïde par l'iode radioactif)

R. Coliez, M. Tubiana, J. Dutreix, and J. Guelfi. *Journal de Radiologie, d'Électrologie, etc.* [*J. Radiol. Électrol.*] **32**, 881–895, 1951. 15 figs., 30 refs.

Details are given of the investigation of 85 cases of cancer of the thyroid at Paris hospitals. A tracer dose of 200 to 1,000 microcuries of radioactive iodine (^{131}I) was given and measurements of radioactivity were made 24 hours later and on several subsequent days. The total uptake of ^{131}I by the thyroid was determined, and a special collimated counter was used to measure the regional distribution of radioactivity in the neck and in other parts of the body. This counter was attached to the short arm of a pantograph giving a 5-to-1 ratio. The other arm of the instrument moved over a piece of graph paper, the tracing thus provided accurately corresponding to the movements of the counter. For each position of the counter the underlying radioactivity was plotted on the paper and lines of " isoactivity " were drawn. When seeking metastases the body was scanned symmetrically, and measurements of radioactivity in any area were compared with those of a corresponding area on the opposite side of the body. Over areas showing an increase in radioactivity, measurements were repeated on several days to exclude a " false rise " due to radioactivity in the blood. Tracer studies were also repeated at intervals to determine the progress of the lesions.

The concentration of ^{131}I in carcinomatous tissue was found to be lower than that in normal thyroid tissue. Metastases were present in 22 cases, and in 10 cases these fixed ^{131}I. In 7 of these cases metastases were detected by ^{131}I before they had become apparent clinically. In 2 patients the uptake of ^{131}I by metastases was increased after an interval of time. In one of these patients radiotherapy to the thyroid and metastases decreased the volume of the latter. At the same time, however, the uptake of ^{131}I by the metastases was increased, whereas that by the thyroid was decreased.

Out of 85 cases studied, 25 were treated with radioactive iodine. *G. Ansell*

260. **Thyroid Function in Normal and Pathological States as Revealed by Radioactive Iodine Studies—I. Thyroid I^{131} Uptake and Turnover in Euthyroid, Hyperthyroid and Hypothyroid Subjects**

A. S. Freedberg, D. L. Chamovitz, and G. S. Kurland. *Metabolism* [*Metabolism*] **1**, 26–35, Jan., 1952. 3 figs., 20 refs.

This paper from the Beth Israel Hospital, Boston, describes 525 tracer studies on 450 patients. Thyroid uptake was measured 24 hours after a dose of 100 to 150 mc. of carrier-free radioactive iodine (^{131}I), and on subsequent days. The accuracy of these measurements was estimated to be within an error of $\pm$5%. In normal control subjects the mean 24-hour uptake was 29%. Patients who were euthyroid after a surgical thyroidectomy for hyperthyroidism also had normal uptake values. In 3 groups of euthyroid patients, however, the mean values for thyroid uptake at 24 hours were significantly higher. These were: (1) patients with non-toxic goitre (37·1%); (2) patients with congestive cardiac failure (38·7%); and (3) patients who had become euthyroid following therapy with ^{131}I for hyperthyroidism (39·5%). With the exception of this last group, the mean biological half-life in all the euthyroid patients was 7·1 days. The group of patients who were euthyroid after ^{131}I therapy, however, showed a significantly shorter biological half-life (4·4 days) indicating a more rapid turnover of iodine by the thyroid. In untreated thyrotoxic patients the mean 24-hour uptake in cases of diffuse goitre (76·2%) was significantly higher than that for nodular goitre (59·8%), but the mean biological half-life in the group of hyperthyroid patients was 5·5 days. In hypothyroid patients the mean uptake at 24 hours was 11·9%.

G. Ansell

261. **Thyroid Function in Normal and Pathological States as Revealed by Radioactive Iodine Studies—II. Factors Influencing the Uptake and Turnover of I^{131} by the Thyroid Gland**

A. S. Freedberg, D. L. Chamovitz, and G. S. Kurland. *Metabolism* [*Metabolism*] **1**, 36–48, Jan., 1952. 2 figs., 34 refs.

This paper elaborates the various factors which might influence the results of the tracer studies described in Abstract 260. The age and sex of the patient had no

definite influence on thyroid uptake. In congestive cardiac failure the thyroid content of ^{131}I at 24 hours was higher than the values found in normal controls, and the content continued to increase for 2 to 7 days. In 3 euthyroid patients with congestive cardiac failure radioactive iodine appeared to be retained in the extracellular fluid, and its excretion was increased after the administration of a mercurial diuretic. This retention of ^{131}I in the extracellular fluid would allow the thyroid to continue its uptake for a longer period than normal and could account for the increased values found in congestive failure. In subacute thyroiditis a temporary subnormal uptake was found in one patient, while 2 other patients had an uptake in the high normal range; administration of a tracer dose of 100 to 150 mc. of ^{131}I did not influence subsequent thyroid uptake. When, however, a therapeutic dose of radioactive iodine was administered, the uptake of a second dose 3 to 14 days later was markedly depressed. Previous medication with stable iodide blocked the uptake of ^{131}I for 10 weeks in one euthyroid patient, while in thyrotoxic patients partial blocking could occur for as long as 3 weeks after omission of stable iodide. When large doses of stable iodide were given 24 to 30 hours after a therapeutic dose of radioactive iodine the authors noted an increased rate of loss of ^{131}I from the gland in 2 patients. Administration of thyroid extract, potassium thiocyanate, or propylthiouracil depressed uptake, and this depression persisted for a variable period after cessation of therapy. Corticotrophin also depressed thyroid uptake, but did not affect the biological half-life of the isotope. Cortisone lengthened the biological half-life, but produced variable effects on thyroid uptake. *G. Ansell*

ADRENAL GLANDS

262. **The Results of Adrenal Medullectomy in 510 Cases of Medullary Hyperadrenalism.** (Résultats de 510 médullectomies surrénales dans les syndromes de l'hypersurrénalisme médullaire)
L. DURANTE. *Presse Médicale* [*Pr. méd.*] **60**, 102–105, Jan. 23, 1952. 7 figs.

The author presents an analysis of 510 cases of hyperadrenalism treated at the St. Martin Hospital, Genoa, during the course of 15 years by adrenal medullectomy; the series included 38 bilateral operations, and there was no operative mortality. This operation, in which the adrenal medulla is destroyed by curettage, has obvious advantages over complete adrenalectomy, in that it spares the nine-tenths of the gland not concerned with the disorder to be corrected. In addition, there is little physiological disturbance after the operation, even when bilateral, because sufficient chromaffin substance for ordinary needs exists in the paraganglia and in the chromaffin elements included in the network of the sympathetic nervous system.

The extraperitoneal lumbar approach is preferred, with or without resection of the 12th rib. The operation is easier and more rapidly performed than total adrenalectomy because no control of the vascular pedicle is required. Little bleeding is experienced from incision of the cortex, but in about 25% of cases there may be considerable haemorrhage from the central vein during the curettage of the medulla. This is, however, easily controlled by simple pressure.

In 58 cases of essential hypertension operated on unilaterally, and in 11 bilaterally, a marked symptomatic amelioration was obtained. In the 5 cases in which bilateral medullectomy was performed in one stage the clinical improvement was impressive, and led to the conclusion that this operation performed bilaterally early enough in the disease is of definite therapeutic value; 3 cases of malignant hypertension treated bilaterally showed considerable improvement, both subjective and objective. In 102 cases of Raynaud's disease treated by this method, including 2 bilaterally, there was prompt and remarkable improvement, and one-third of this series, observed over 7 years, showed practically no return of the spasm.

It was, however, in the treatment of endarteritis obliterans that the most striking and certain results were obtained by adrenal medullectomy, which puts out of action the most important paraganglion of the body. The operation will not, indeed, reopen an artery which has been closed by a proliferative endarteritis of many years' standing, but by suppressing the overaction of the medulla throughout the vascular tree it will ensure that the collateral circulation is free and unimpeded by spasm; 236 cases of endarteritis were subjected to medullectomy (45 spasmodic, 68 pregangrenous, and 123 gangrenous). Of these 70% had already been treated by other surgical methods. Practically all the spasmodic cases were permanently cured; in the remainder any existing spasm was relieved, with return of warmth to the limb, but 20% experienced a relapse after 5, 6, or 7 months of improvement. Medullectomy then performed on the other side in 3 such cases gave a completely favourable and lasting improvement, and the author regrets that he had not treated a greater number of these cases by bilateral operation in the first instance.

The complete success of this operation (5 unilateral and 2 bilateral) in the treatment of 7 cases of advanced generalized scleroderma suggests that the effect of the operation is not only upon the vascular network, but also in the mesenchymal and supporting body tissues. The author concludes that if that is so, there would appear to be a wide field open for surgical experiment.
D. P. McDonald

263. **The Occurrence and Significance of Leydig Cell Proliferation in Familial Adrenal Cortical Hyperplasia**
B. H. LANDING and E. GOLD. *Journal of Clinical Endocrinology* [*J. clin. Endocrinol.*] **11**, 1436–1453, Dec., 1951. 8 figs., bibliography.

The pathological findings are described in 3 male infants examined at the Children's Medical Center and Harvard Medical School, Boston, Massachusetts, in whom vomiting and other gastro-intestinal symptoms developed within several days of birth, and who later showed dehydration, apathy, and cyanosis, with Addisonian crises which eventually caused death after 5 weeks, 10 weeks, and 14 months respectively. The

necropsy findings were similar in all 3 cases: enlargement of the adrenal cortex with lack of clear differentiation into zones, absence of spermatogenesis and intra-tubular Leydig cells, and the presence of many microscopic, non-encapsulated nodules of presumed Leydig cells in the region of the rete testis. The distinction of the hyperplastic adrenal cells from these cells of the testicular nodules was cytologically and morphologically clear, particularly in 2 of the cases which showed nodules of ectopic adrenal tissue also adjacent to the rete testis. These nodules were composed of cells indistinguishable from those of the hyperplastic adrenal cortex and, like them, were encapsulated, arranged in cords, and surrounded a central mass of degenerating foetal cortex. The pituitary glands contained a relative excess of granular basophil cells, some carmine cells, and a relative lack of eosinophil cells, those present having a hyaline cytoplasm.

Similar nodules of cells occurring in the testis have been reported in at least 6 cases in the literature, but were larger and regarded as " aberrant adrenal cortical tissue " or as " adrenal-cell tumours ". But since in these cases the patients were all older than in the 3 reported here, the greater size of the nodules was to be expected. The comparative rarity of hyperplasia of the homologous ovarian hilar cells in female pseudohermaphroditism is borne out by the failure to detect any such hyperplasia in 5 cases—one a sibling of one of the male infants. There is, however, a great difference between the condition in the two sexes in other respects: Addisonian symptoms are comparatively rare in females, who tend to survive longer. On the basis of the evidence available the authors attribute the condition described to excessive production of luteinizing hormone by the basophil cells of the pituitary gland, thus explaining the hyperplasia of both Leydig cells and adrenal cortical androgen-producing cells. *Peter C. Williams*

264. **The Failure of Water Diuresis in Addison's Disease**
J. Reforzo-Membrives and O. M. Repetto. *Journal of Clinical Endocrinology* [*J. clin. Endocrinol.*] **11**, 1454–1468, Dec., 1951. 1 fig., bibliography.

At the National Institute of Endocrinology, Buenos Aires, mannitol clearance was determined in 6 patients with Addison's disease and in 5 control subjects under normal conditions and after the ingestion of diuretic volumes of water as a means of studying kidney function. The rate of water diuresis was normal in 2 of the patients, but there was no diuresis in the other 4. Glomerular filtration was increased or only slightly decreased after water ingestion in the control subjects, but decreased to a much greater extent in all the patients with Addison's disease; in addition, the rate of filtration was subnormal without water ingestion in 3 of these patients. Tubular reabsorption of water expressed in absolute terms was significantly decreased after water ingestion in the patients—much more so than in the control subjects, though this was not so apparent when reabsorption was expressed in relation to filtration rate, when only the 2 patients in whom water diuresis was normal showed a significant reduction in reabsorption.

These results suggest that the mechanism of failure of diuresis in human adrenal deficiency differs from that in such animals as the rat. There is no evidence that either excessive production or unantagonized action of neurohypophysial antidiuretic hormone is responsible for the failure in man. The subnormal rate of sodium excretion found after water ingestion in the patients studied supports this conclusion. The occurrence of a reduction in tubular reabsorption of water sufficient to compensate for the reduction in glomerular filtration rate may explain the occasional case of Addison's disease in which the result of the water test is not diagnostic.
Peter C. Williams

265. **The Response of the Clotting Equilibrium to Post-operative Stress**
G. de Takats and M. H. Marshall. *Surgery* [*Surgery*] **31**, 13–27, Jan., 1952. 15 figs., 33 refs.

The possibility that post-operative changes in the clotting mechanism of the blood might reflect an aspect of the general adaptation syndrome has been investigated at the University of Illinois College of Medicine. The clotting time was estimated before and after surgical operations and before and after the subcutaneous injection of 0·3 mg. of adrenaline. Eosinophil counts were also made. The authors conclude that the clotting time fluctuated in response to surgical operations in a manner which justified its being included among the manifestations of the general adaptation syndrome.
C. G. Rob

DIABETES MELLITUS

266. **The Heredity of Hypertension in Diabetes Mellitus**
H. W. Balme and L. Cole. *Quarterly Journal of Medicine* [*Quart. J. Med.*] **20**, 335–351, Oct., 1951. 4 figs., bibliography.

The authors discuss some of the opinions expressed by others and analyse a series of their own cases in an attempt to evaluate the role of heredity in the development of hypertension and atheroma in diabetics, the incidence of which is higher than in normal individuals. They point out that there is evidence of a hereditary factor in the aetiology of both diabetes and hypertension, and that " it is theoretically possible that hypertension causes diabetes, that diabetes causes hypertension, that both are simultaneously caused by the same agency, and that both coexist as separate diseases ", each of the possibilities having its adherents.

The authors studied 209 patients over the age of 30 with " pure " diabetes and compared their findings with those in 100 non-diabetics, 50 of whom had essential hypertension. Attention was paid to: (1) incidence of hypertension in the diabetic group; (2) incidence of a family history of hypertension in all groups; and (3) relation of findings to sex, age, and weight. The occurrence of a systolic blood pressure of 160 mm. Hg or more or a diastolic reading of 95 mm. Hg or more was taken as indicating hypertension; while the authors recognize that systolic and diastolic hypertension are of different significance, no attempt was made " to distinguish hyper-

tension with a high diastolic pressure in the younger age groups from the high systolic pressure with relatively low diastolic pressure which is common in the aged ". Death from cerebrovascular causes was considered as evidence of hypertension in the family.

The conclusions are drawn that heredity plays a significant role in the hypertension of both diabetic and non-diabetic individuals, that in all respects its influence is similar in the two groups, and that the heredity of hypertension and of diabetes are not linked.

[The statistical data are too extensive to include in an abstract. While the authors emphasize that hypertension and atheroma are not " parallel conditions ", they treat them as if they were synonymous, particularly in their failure to distinguish between systolic and diastolic hypertension and in their acceptance of a history of cerebrovascular death as evidence of hypertension. This makes the conclusions unsound.] *I. Grayce*

267. **Controlled versus Free Diet Management of Diabetes**

J. L. WILSON, H. F. ROOT, and A. MARBLE. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **147**, 1526–1529, Dec. 15, 1951. 3 figs., 11 refs.

At the New England Deaconess Hospital, Boston, Massachusetts, a study was made, in 221 young patients with diabetes of 10 to 34 years' duration, of the effect of control of the disease or lack of it on the incidence of complications, particularly retinopathy and arterial calcification. The disease was regarded as controlled when careful adherence to diet and maintenance of normal blood and urinary sugar levels, so far as possible, were observed; and as uncontrolled when a free diet had been followed, with sufficient insulin to ensure health but with constant hyperglycaemia. The authors' figures show a far lower incidence, but not a complete absence, of the above complications in the controlled group.

R. D. Lawrence

268. **Charcot Joints and Infectious-vascular Lesions of Bones in Diabetes Mellitus**

B. BEIDLEMAN and G. G. DUNCAN. *American Journal of Medicine* [*Amer. J. Med.*] **12**, 43–52, Jan., 1952. 6 figs., 21 refs.

Charcot joints occurring in diabetes mellitus being relatively rare, the authors describe 4 cases from the Pennsylvania Hospital, Philadelphia. All 4 diabetics were poorly stabilized and required moderate amounts of insulin. There were signs of diabetic neuropathy in all cases: absent knee- and ankle-jerks, and anaesthesia with Rombergism or diminished vibration sense. The dorsalis pedis artery and posterior tibial vessels were palpable in 3 cases, but not in the other case.

Two patients were found to have swelling of the foot associated with radiological changes in the tarsus consisting of destruction and sclerosis of the tarsal bones and adjacent portions of the metatarsus, tibia, and fibula. The intertarsal joints were obliterated. This is similar to the changes which occur in neurosyphilis and syringomyelia. The other 2 patients had in addition a destructive local process in the phalanges and metatarsals associated with a chronic infection of the soft tissues. The pathogenesis of the two lesions is discussed and their differentiation described. The possibility of improvement in the Charcot joints after lumbar sympathectomy is suggested. *I. McLean-Baird*

269. **A New Liver Extract Derived from Pregnant Mammalian Liver—I. Its Effect on Peripheral Neuropathy**

W. S. COLLENS, J. D. ZILINSKY, J. J. GREENWALD, and A. B. STERN. *American Journal of Medicine* [*Amer. J. Med.*] **12**, 53–58, Jan., 1952. 4 refs.

The authors describe their studies of an extract of pregnant mammalian liver and of its effect in cases of severe diabetic neuropathy at the Maimonides Hospital, Brooklyn, New York. Several preparations were first tried, but it was found that a crude liver extract from pregnant mammals yielded a preparation of highest clinical potency. It is described as a water-soluble, non-toxic substance, and is administered in doses of 4 ml. intramuscularly for a fortnight. The extract did not produce a reticulocytosis, and was found to contain only negligible fractions of folic acid and vitamin B_{12}.

The antineuritic properties of the extract, thought to be due to an unknown factor, were investigated by its administration in 127 cases of diabetes with long-standing manifestations of neuropathy—pains, paraesthesiae, anaesthesia, and diminished vibration sense and deep reflexes. The symptomatic improvement was dramatic and maintained in 84% of cases. Pains which were incapacitating rapidly disappeared, but objective findings were not greatly altered and diminished reflexes and muscular wasting were unaffected. *I. McLean-Baird*

270. **Experiences with a New Liver Extract for the Treatment of Diabetic Neuropathies**

I. M. RABINOWITCH. *American Journal of Medicine* [*Amer. J. Med.*] **12**, 59–65, Jan., 1952. 4 refs.

The author describes the use of pregnant mammalian liver extract [see Abstract 269] in the treatment of severe and long-standing diabetic neuropathy at the Montreal General Hospital. Hyperglycaemia was deliberately allowed to develop, and no cases were included in which symptoms had not been constant and severe for at least 2 months. This was to eliminate 2 possible fallacies in the assessment of the results of therapy: (1) the improvement due to successful control of the diabetes (which is stated by Joslin to be a cardinal factor in the control of the neuropathy); and (2) the possibility of a spontaneous improvement occurring in mild cases.

The extract was given intramuscularly in doses of 5 ml. daily to 7 patients with diabetic neuropathy, including 2 women with incontinence of urine due to " diabetic cord bladder ". The results described by the author were dramatic: the relief of such symptoms as severe disabling pain was immediate and persisted after the injections were stopped. The physical signs, such as limitation of movement and foot-drop, were improved in a few days, and this improvement was maintained.

[This new treatment of diabetic neuropathy will be a great advance if its effectiveness is confirmed by further study.] *I. McLean-Baird*

Dermatology

271. **Clinical Study of " Quotane ", a New Antipruritic Drug**
F. W. LYNCH and O. E. OCKULY. *Archives of Dermatology and Syphilology* [*Arch. Derm. Syph., Chicago*] **65**, 35–38, Jan., 1952. 4 refs.

A new antipruritic drug, " quotane " (1-(β-dimethylaminoethoxy)-3-*n*-butyl*iso*quinoline monohydrochloride), was used in treating itching from a variety of causes in 250 patients. There was no effective control series, but the impression gained was that relief was obtained in a majority of patients.

In 15 trials application of quotane in an ointment base was later followed by application of the base alone. In one instance the latter was thought to give the greater relief, in 8 patients no difference was noted, and in 6 the former was thought to give better results.

John T. Ingram

272. **Intravenous Use of Procaine Hydrochloride in Control of Pruritus**
L. G. BEINHAUER, G. J. THOMAS, and S. R. PERRIN. *Archives of Dermatology and Syphilology* [*Arch. Derm. Syph., Chicago*] **65**, 39–44, Jan., 1952. 22 refs.

Intravenous procaine hydrochloride may be used for relief of pruritus, but it is pointed out that such use is contraindicated in patients with thyrotoxicosis, with myasthenia gravis, or with digitalis or procaine allergy. The authors found that dizziness, apprehension, trembling, and unconsciousness may arise, depending partly on the dose and rate of injection of the drug.

Of a series of 181 patients treated 55 were unrelieved, 67 were relieved temporarily, and 59 appeared to be completely relieved. The majority of the subjects treated were suffering from neurodermatitis.

John T. Ingram

273. **The Nervous and Chemical Control of Sweating**
T. M. CHALMERS and C. A. KEELE. *British Journal of Dermatology* [*Brit. J. Derm.*] **64**, 43–54, Feb., 1952. 2 figs., 16 refs.

The authors carried out various experiments at the Middlesex Hospital Medical School, London, to determine whether essential hyperidrosis is due to an increased sensitivity of the hyperactive sweat glands to the chemical transmitter acetylcholine and to assess the relative contribution of central nervous control and peripheral sensitivity in abnormal sweating. They conclude that essential hyperidrosis must be attributed to excessive stimulation through the nervous pathway, though at what level in the central nervous system (or possibly in the sympathetic ganglia) such hyperactivity is located is not at present known.

Although the sweat glands which take part in both thermal and emotional sweating can be excited by adrenaline and noradrenaline, there is no evidence that adrenergic nerves play any part in the physiological control of sweating. In man the innervation of sweat glands appears to be entirely cholinergic.

The excessive palmar and plantar sweating in essential hyperidrosis can be controlled by atropine, but only in doses which also inhibit salivary secretion, and some disturbance of accommodation may occur. Similar disadvantages have been noted with another acetylcholine inhibitor, " banthine ".

The authors treated 6 cases of hyperidrosis with ganglionic blocking agents of the methonium group, and found that in 4 of the patients hexamethonium bromide produced partial suppression of sweating without side-effects such as postural hypotension. The average oral dose was 250 mg. thrice daily, and after each dose the sweating was reduced within 15 minutes and remained so for 3 or 4 hours. *E. W. Prosser Thomas*

274. **Treatment of Exfoliative Dermatitis with Cortisone**
B. M. WEST. *Archives of Dermatology and Syphilology* [*Arch. Derm. Syph., Chicago*] **65**, 56–58, Jan., 1952. 11 refs.

The intramuscular administration of cortisone effected a rapid cure of generalized dermatitis in 3 patients in a U.S. Veterans Administration Hospital, each of whom gave a history of psychosis. The dermatitis had resulted as a reaction to various local applications used in the treatment of eczema. *John T. Ingram*

275. **Local Digitalis Therapy of Leg Ulcers.** (Digitalisbehandlung der Ulcera cruris)
A. LUGER and S. WOLFRAM. *Hautarzt* [*Hautarzt*] **3**, 78–82, Feb., 1952. 2 figs., 16 refs.

At the Dermatological Clinic of the University of Vienna 126 cases of chronic leg ulcer, mostly of varicose origin, received topical applications of digitalis as powder, solution, or ointment. In these patients surgical treatment of their venous or arterial disorders was apparently not feasible. Electrocardiograms failed to show any general effect of the digitalis applications. Healing or improvement took place in over 91% of the patients; this result compares favourably with other types of local treatment. The mode of action of the digitalis is unknown. *G. W. Csonka*

276. **Environmental and Individual Factors in the Etiology of Prickly Heat**
G. O. HORNE. *Journal of Investigative Dermatology* [*J. invest. Derm.*] **18**, 97–106, Feb., 1952. 17 refs.

At Karachi the incidence and severity of prickly heat could be correlated with climatic factors, being greater at the coastal stations with a higher minimum temperature and air humidity than at stations inland.

A fuller study of the relationship between prickly heat and environment was made at the Royal Air Force General Hospital at Karachi among members of the hospital staff. The severity of prickly heat was signifi-

cantly greater in active than in sedentary groups both on night and day duty, but in each group it was greater in those who worked overnight than in those who worked during the day. The hot surroundings of the cooks and operating-room assistants are said not to have constituted an additional hazard. [Nevertheless, all of these working during the day suffered from prickly heat.] The type of clothing is thought to be of importance. Complexion, weight, and degree of tanning were considered, but conclusions as to their significance in relation to prickly heat cannot be drawn.

[Reference is made to two figures, but neither is included in the paper.] *S. T. Anning*

277. **Climatic Environmental Factors in the Etiology of Skin Diseases**

G. O. Horne. *Journal of Investigative Dermatology* [*J. invest. Derm.*] **18**, 107–112, Feb., 1952. 1 fig., 12 refs.

The admission rate of patients to the Royal Air Force General Hospital at Karachi was used in assessing the effect of climate on skin diseases. The important climatic factors appeared to be the minimum dry-bulb temperature and humidity, not the maximum dry-bulb temperature. Small differences of a few degrees seemed to be important when the minimum temperature was of the order of 80° F. (26·7° C.).

Prickly heat, bullous impetigo, and hidradenitis were the conditions found to be related to these climatic changes.

[Although fungus infections are stated to have been more common during the hot season, the peak incidence of admission of such cases is shown to be after the hot season, indicating that study of hospital admission rates provides artificial evidence. The actual incidence of these conditions in the Service units would be much more valuable.] *S. T. Anning*

278. **Therapeutic Dermatitis**

C. G. Lane. *New England Journal of Medicine* [*New Engl. J. Med.*] **246**, 77–81, Jan. 17, 1952. 11 refs.

The author defines " therapeutic dermatitis " as the dermatitis that develops shortly after the application of a remedial agent to the skin. A majority of the offending applications are proprietary preparations, and the substances most commonly involved are local antipruritics, sulphonamides, penicillin, mercury, phenol, tar, menthol, camphor, " furacin " (nitrofurazone), iodine, and salicylic acid. The dermatitis is usually due to sensitization of the skin as the result of previous contact with the substance concerned or a related substance. It is seen most frequently in the treatment of pruritus and " athlete's foot ", and the author gives lists of some of the proprietary preparations which may be involved. In some 10% of cases there is a generalized sensitization, which may occur by gradual extension, but more usually takes the form of a sudden, intense, patchy or generalized pruritus, with an exaggeration of signs in the affected areas.

With regard to prevention a plea is made for better information of the public, the druggist, and the physician as to the possibilities of skin sensitization. The importance of accurate diagnosis of skin diseases and of a knowledge of both the course of the disease and the possible complications of the treatment advised is also stressed. The first essential in treatment of the dermatitis is the identification and elimination of the causal agent. Thereafter the acute condition should be treated on routine lines with wet compresses, calamine lotion, and Lassar's paste. *Benjamin Schwartz*

279. **Liquid Nitrogen in the Treatment of Warts**

J. K. Morgan. *British Journal of Dermatology* [*Brit. J. Derm.*] **64**, 55–58, Feb., 1952. 11 refs.

The author, at the Leeds General Infirmary, treated a large number of warts of various kinds by freezing with pure liquid nitrogen, which is a by-product of the commercial preparation of oxygen and is readily obtainable in urban areas at small cost. As a freezing agent it compares well with liquid oxygen, but the gas is inert and therefore does not carry with it the risk of fire, which is a major objection to oxygen. It gives a greater local reaction and is more rapid in action than carbon dioxide snow.

Reasonably successful results were obtained in the treatment of common and plane warts, but the response of plantar warts was unreliable and inferior to that observed with other methods. *E. W. Prosser Thomas*

280. **Chloramphenicol in Treatment of Cutaneous Anthrax**

P. S. Clarke. *British Medical Journal* [*Brit. med. J.*] **1**, 86–87, Jan. 12, 1952. 1 fig., 1 ref.

Bacteriologically confirmed cutaneous anthrax developed in 4 Indians (2 adults and 2 children) as a result of eating meat from a cow which had died of the disease, and an infant aged 10 months was infected by contact with the same meat. One patient died before effective treatment could be given, but 3 of the others and a sixth, unconnected, case of anthrax were treated with chloramphenicol in an initial dose of 52 to 64 mg. per kg. body weight followed by 30 mg. per kg. 8-hourly for 60 hours, then 15 mg. per kg. 8-hourly for 48 hours, and finally 7·5 mg. per kg. 8-hourly for a further 48 hours. The remaining patient was treated with penicillin, sulphadiazine, and arsenicals along the usual lines. All 5 patients showed rapid improvement and recovered, there being no apparent difference in the effectiveness of the two methods of treatment, although no valid conclusions can be drawn from so small a series.

R. S. Illingworth

281. **Tropical Ulcers of the Leg and Nail Bed. Aureomycin Ointment in their Treatment**

A. H. Lasbrey. *South African Medical Journal* [*S. Afr. med. J.*] **26**, 66–69, Jan. 26, 1952. 2 figs., 3 refs.

Aureomycin ointment, used locally at the McCord Zulu Hospital, Durban, in the treatment of 74 cases of tropical ulcer (sloughing phagedaena) of the foot, leg, or nail-bed, produced very rapid healing of the lesions. The patients were ambulant, and dressings of the ointment were applied at intervals of 3 to 14 days. Bacteriological examination was carried out in 46 cases before

treatment, Vincent's organism being present in all but 5. A complete bacteriological study of one patient in hospital gave the following results. Before the application of aureomycin, fusiform bacilli were found on direct examination, and coagulase-positive *Staphylococcus aureus* and non-haemolytic streptococci on culture; 6, 12, 18, and 24 hours after starting treatment fusiform bacilli were present on direct examination, but cultures were sterile; while 36 and 48 hours later no organisms were found on direct examination and cultures were again sterile. Although the Wassermann reaction was positive in 3 cases, healing was not delayed.

G. A. Hodgson

282. **The Treatment of Lupus Erythematosus Disseminatus with Cortisone**

S. A. M. JOHNSON and O. O. MEYER. *American Journal of the Medical Sciences* [*Amer. J. med. Sci.*] **223**, 9–15, Jan., 1952. 13 refs.

From a study of 9 treated cases of lupus erythematosus disseminatus it is concluded that cortisone administration is usually effective in the amelioration of symptoms and signs of the disease, but relapse follows cessation of therapy. Cortisone therapy probably has its chief value in the treatment of acute episodes where it may tide the patient over a critical period and be life saving. Certain complications may arise while cortisone is being administered which may necessitate cessation of therapy or reduction of dosage. These should be watched for so that proper steps for control may be promptly instituted. —[Authors' summary.]

283. **Pemphigus. A Histopathologic Study**

W. F. LEVER. *Archives of Dermatology and Syphilology* [*Arch. Derm. Syph., Chicago*] **64**, 727–753, Dec., 1951. 6 figs., 34 refs.

A review of sections obtained from the skin and mucous membranes of 65 patients at the Massachusetts General Hospital who suffered from various forms of pemphigus has confirmed the findings of Civatte, who stated in 1943 that the bulla of pemphigus presented characteristic histological features which permitted differentiation from the bullae of dermatitis herpetiformis and of erythema multiforme, even in those cases in which differentiation was impossible clinically. The author used the following classification of pemphigus: (1) pemphigus vulgaris acutus (malignant pemphigus vulgaris); (2) pemphigus vulgaris chronicus (benign pemphigus vulgaris); (3) pemphigus vegetans; (4) pemphigus foliaceus; (5) pemphigus erythematosus (Senear–Usher syndrome); and (6) benign mucous-membrane pemphigus (pemphigus conjunctivae).

In acute or true malignant pemphigus (sections studied from 23 cases) there were degenerative changes of epidermal cells with loss of intercellular bridges leading to acantholysis and formation of clefts and bullae in the lower epidermis, usually immediately above the basal layer. Similar changes occurred in pemphigus vegetans and pemphigus foliaceus, but in the latter were located in the upper epidermis, usually within or just below the granular layer, leading to the formation of a cleft in a superficial, often subcorneal, position. Older lesions in pemphigus foliaceus showed hyperkeratosis and degenerative changes of the granular cells resembling the grains of keratosis follicularis (Darier's disease). The term "pemphigus erythematosus" (Senear–Usher syndrome) is here applied to abortive, non-progressive cases of pemphigus foliaceus which present features suggesting lupus erythematosus or seborrhoeic dermatitis. In one patient with this diagnosis there was detachment of the epidermis at the level of the horny or granular layer with acantholysis as in pemphigus foliaceus, but follicular plugging was present to a greater extent.

On the other hand, in pemphigus vulgaris chronicus (18 cases) the bullae were subepidermal and there was no acantholysis—that is, no loss of intercellular bridges with detachment of individual cells or clusters of cells and no nuclear changes as in acute pemphigus. Most bullae showed within their cavity, as well as in the underlying corium, a moderately severe inflammatory infiltrate, often with numerous eosinophil leucocytes. Similar subepidermal bullae also occur in dermatitis herpetiformis, herpes gestationis, erythema multiforme, and epidermolysis bullosa, and the cases here classified as of chronic pemphigus would be regarded by many dermatologists as instances of a bullous form of dermatitis herpetiformis.

Pemphigus conjunctivae (6 cases) showed subepidermal bullae without acantholysis.

Two patients who died with the clinical manifestations of acute febrile pemphigus, or butchers' pemphigus, as described in the literature, also showed subepidermal bullae. The clinical diagnosis in both cases was severe erythema multiforme or Stevens–Johnson disease, and the author believes that butchers' pemphigus is identical with severe erythema multiforme.

E. W. Prosser Thomas

284. **The Treatment of Psoriasis Arthropathica with Corticotrophin.** (ACTH-Behandlung der Psoriasis arthropathica)

T. GRÜNEBERG. *Zeitschrift für Haut- und Geschlechtskrankheiten* [*Z. Haut- u. Geschlkr.*] **12**, 89–94, Feb. 1, 1951. 4 refs.

The author gives a short review of his investigations into the therapeutic possibilities of adrenal extracts in psoriasis, which he began in 1934. Initial results were promising, but the series had to be interrupted. Recently 4 patients with arthropathic psoriasis were given corticotrophin. The condition of the first patient improved strikingly after a short course of treatment, but relapsed a few weeks after its cessation. The second responded equally well to a 15-day course of the hormone and has remained symptom-free for 4 months up to date. The third patient improved, but the skin lesions reappeared a few days after the last injection, whereas the arthritis remained controlled for 4 months. The last patient complained of pain and oppression in the chest and back a few minutes after corticotrophin injections, and this treatment had to be abandoned.

The author concludes that ACTH in small but gradually increasing doses is effective in the control of psoriasis and may diminish the tendency to relapse.

G. W. Csonka

The Breast

285. **The Roentgenology and Pathology of Cyclic Disturbances in the Breast. With Special Reference to their Surgical Diagnosis**
J. GERSHON-COHEN and H. INGLEBY. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 91–102, Jan., 1952. 8 figs., 17 refs.

The authors of this paper from the Jewish Hospital, Philadelphia, have endeavoured to reduce the number of " unnecessary " biopsies of the breast by supplementing the usual clinical methods by radiological examination, and in an investigation of 200 cases of breast disease by radiological and pathological methods have attempted to correlate a particular radiological appearance with a specific histological picture. The paper consists of a description of different types of breast lesion, followed in each case by an account of the radiographic appearances in both lateral and tangential views.

[Unfortunately the classification of innocent lesions which is employed is not very easy to follow. For instance, what is commonly termed fibroadenosis in Great Britain is divided into: (1) mazoplasia—Group I, Group II; (2) secretory cystic disease, with or without plasma-cell mastitis; (3) Schimmelbusch disease (mastopathy); and it is not altogether clear from the description where the dividing line comes between these different types. The authors claim that each of these conditions, together with fibroadenoma and papilloma, has a characteristic radiological picture. Unfortunately radiological minutiae are somewhat unconvincing when reproduced on a small scale for publication, but undoubtedly certain characteristic features of different types of disease of the breast are suggested by radiological examination.

There are two grounds for criticism of this paper. A fundamental fault is that there is no discussion of the normal breast and its radiological appearances, so that, scientifically speaking, the investigation is uncontrolled. And it is unfortunate that the radiological appearance of carcinoma of the breast, the one condition which it would be important to distinguish from all the rest, is not discussed; no doubt this will be made the subject of a later study. The paper is, on the other hand, valuable for pointing out that both epithelium and some of the fibrous elements in the breast are part of the parenchyma, and both therefore would be expected to be under hormonal control. Stress is also laid on the importance of the myo-epithelium in certain tumours.]

H. J. B. Atkins

286. **The Artificial Menopause and Cancer of the Breast**
A. HOCHMAN. *Journal of the Faculty of Radiologists* [*J. Fac. Radiol.*] **3**, 199–202, Jan., 1952. 7 refs.

The author reports on the effect on carcinoma of the breast of induction of an artificial menopause by irradiation of the ovaries in 60 pre-menopausal women out of 393 seen at the Rothschild–Hadassah University Hospital, Jerusalem, between 1938 and 1945. The results are analysed according to the stage of the disease, distribution of metastases, and histological type of the tumour. Improvement is claimed in 34 cases (56%) (which includes those showing only subjective improvement). It is suggested that patients with metastases in the bones respond particularly favourably to the induction of an artificial menopause, and those with metastases in lung and pleura less favourably, in the skin less favourably still, and in the lymph nodes hardly at all. No improvement was observed in any patient with metastases in the liver or brain. Improvement was most marked in those patients with adenocarcinoma corresponding to Broders's Grades I and II, and little response was obtained in cases of anaplastic carcinoma.

D. Waldron Smithers

287. **Steroids in Cancer of the Breast**
R. ROSH and G. G. GREEN. *Radiology* [*Radiology*] **57**, 837–844, Dec., 1951. 4 figs., 20 refs.

The authors give a short review of the literature of the treatment of carcinoma of the breast and report their own series of 50 patients treated with oestrogens and androgens. Symptomatic relief occurred in approximately half their patients, but objective evidence of improvement in only a quarter. Testosterone was administered by injection in doses of 100 mg. 3 times weekly. One case of hypercalcaemia at this dosage, occurring in an elderly and debilitated patient, is mentioned. The authors recommend irradiation of the ovaries in young women suffering from carcinoma of the breast, but do not discuss their own experience of this method. Three case histories are given, but there is no detailed analysis of the series treated.

John Millen

288. **Radical Excision of the Chest Wall for Mammary Cancer**
J. A. URBAN. *Cancer* [*Cancer*] **4**, 1263–1285, Nov., 1951. 50 figs., 8 refs.

The author reports on 17 cases of carcinoma of the breast treated at the Memorial Center for Cancer, New York, by radical excision of the chest wall. This treatment is suitable for carcinoma of the medial half of the breast, lesions fixed to and invading the thorax, local recurrence, and radium (or *x*-ray) necrosis.

The 2nd, 3rd, and 4th ribs from 1 in. (2·5 cm.) lateral to the costo-chondral junctions, the portion of the sternum to which they are attached, intercostal bundles, internal mammary glands, pleura, and overlying carcinoma and skin are excised *en bloc*. The extent of the excision varies with the size of the lesion, and 4 or more ribs may be excised if involved. The incision in suitable cases extends horizontally along the 1st intercostal space, down the lateral border of the sternum, horizontally across the chest from the level of the 4th costo-sternal junction to the mid-axillary line, and vertically to join the

first incision. The underlying thoracic cage and parietal pleura are excised, and may include as much as three-quarters of the width of the sternum. The defect is closed with a graft of fascia lata or tantalum gauze sutured with fine silk to the surrounding muscles, fascia, and periosteum and covered by a pedicled flap of skin and subcutaneous tissue cut from the epigastrium, neck, or opposite breast. If the breast is used, its deep surface should be split vertically to gain length. The deep surface of pedicled skin flap is sutured to the margin of the defect in the thoracic cage to obliterate dead space before approximating the skin edges. An intercostal tube drain is placed through the 6th intercostal space in the mid-axillary line, the lung inflated, and the end of the tube placed under water. The subcutaneous tissues are drained by means of a single Penrose drainage tube.

During the operation 500 to 1,500 ml. of blood is transfused. Radiographs are taken immediately to make sure that no pneumothorax has been left. If subsequent radiographs are satisfactory the intercostal drain is removed after 24 hours. In the present series the wounds healed well and the patients left hospital 10 to 14 days after operation. The follow-up period has been short, being only 3 months in the patients most recently operated upon. One patient operated upon for a recurrence in the soft tissues over the 2nd and 3rd ribs and *x*-ray necrosis died from metastases in the opposite lung 3 years after radical excision of the chest wall. The other 16 patients are alive, and 10 of them have no clinical evidence of metastasis. *Charles P. Nicholas*

289. **Cystosarcoma Phyllodes of the Breast: a Malignant and a Benign Tumor. A Clinicopathological Study of Seventy-seven Cases**
N. TREVES and A. SUNDERLAND. *Cancer* [*Cancer*] **4**, 1286–1332, Nov., 1951. 77 figs., 20 refs.

The authors review 77 cases of cystosarcoma phyllodes of the breast treated at the Memorial Center for Cancer, New York. The criterion for the diagnosis in each case was disproportionate stromal hyperplasia to the exclusion of epithelial activity in the acini and ducts. This is said to distinguish the condition from fibroadenoma, the more usually accepted distinction of size being considered of less diagnostic importance. The authors admit that in a few cases it was impossible to distinguish between the two conditions.

The cases are subdivided microscopically into benign (41), malignant (18), and borderline (18). The earliest signs of malignancy are described as hyperplasia and anaplasia of the subepithelial stroma of the ducts. The late microscopic appearances and clinical behaviour of the tumours are those of spindle-celled or pleomorphic fibrosarcoma. Irregular multinucleated giant cells were seen in both benign and malignant cases. Metastases through the blood stream to the lungs (6) and bones (3) occurred in the cases classified as malignant.

Cystosarcoma phyllodes may arise *de novo* or develop from pre-existing fibroadenoma. The majority of the malignant tumours occurred in women who had not been pregnant. Photomicrographs illustrating both modes of origin are reproduced in the article. As it is considered impossible to distinguish clinically between benign and early malignant cases, radical mastectomy is advised as the treatment of choice. Examples of local recurrence and widespread metastases after local excision and local mastectomy are cited.

According to the authors the condition usually develops as a slowly growing, painless tumour in the breast, reaching a large size without becoming fixed and without involving the axillary lymph nodes. Nevertheless, growth may be rapid, there is occasionally a blood-stained discharge from the nipple, and there may be a metastasis in a lymph node, as occurred in one case of the series. The surface of the tumour is irregularly bossed, some parts feel firmly solid, and others may fluctuate. In large tumours the skin is stretched and shiny and may be blanched or cyanotic. The skin may give way and ulcerate and a serous discharge occur, but the skin is not invaded by the growth. When secondary infection occurs the axillary nodes may be enlarged. The tumour may become attached to the pectoral fascia, but even the malignant variety seldom invades the thoracic wall. *Charles P. Nicholas*

290. **The True Primary Sarcomata of the Breast.** (Les sarcomes vrais primitifs de la mamelle)
L. FRUHLING and Y. LE GAL. *Bulletin de l'Association Française pour l'Étude du Cancer* [*Bull. Ass. franç. Cancer*] **38**, 477–496, 1951. 14 figs., 11 refs.

The authors report 30 cases (29 female and one male) of primary sarcoma of the breast; 19 were considered to have developed from pre-existing fibroadenomata and 11 occurred spontaneously. In 2 cases early sarcomatous change was seen in parts of the fibroadenoma, and the origin of malignancy is considered to be in the neoplastic connective tissue of the benign tumour rather than in that of the stroma. The histological classification of the tumours was as follows: fibrosarcoma 5 cases, dictyosarcoma 3, lymphosarcoma 3, liposarcoma 1, reticulosarcoma 2, rhabdomyosarcoma 1, endotheliosarcoma 1, histiosarcoma 14. The last group formed nearly half the total, and the cellular appearance was uniform in 6 and pleomorphic with giant cells in 2, while in 6 there was osteoid tissue.

The relative frequency of histiosarcoma of the breast in this small series of cases is greater than in subcutaneous tissue, and the authors suggest that this type of tumour arises from histiocytes in specialized peri-alveolar connective tissue. They give the incidence of mammary sarcoma as 1·5 per 100 carcinomata in a series of 2,000 neoplasms. The breast was found to be the fifth commonest site for sarcoma to occur in a series of over 600 sarcomata. The order of frequency was as follows: lymphatic tissue over 300, bones 230, uterus 61, stomach 35, breast 30, skin 30.

[Although the authors make some observations regarding the age incidence and prognosis, these have not been included in this abstract because they state that the ages of 22 of their patients were not known, and further because of wartime evacuation it was not possible to follow up many of their patients after radical mastectomy.] *Charles P. Nicholas*

Venereal Diseases

291. **The Treatment of Inclusion Urethritis, including One Case of Reiter's Disease, with Chloramphenicol**
G. M. FINDLAY and R. R. WILLCOX. *American Journal of Syphilis, Gonorrhea and Venereal Diseases* [*Amer. J. Syph.*] **35**, 583–592, Nov., 1951. 8 refs.

A series of 12 patients with non-gonococcal urethritis (1 being complicated by Reiter's syndrome), 2 of their wives and 1 female consort, and 1 additional male patient with epididymitis complicating cystitis due to *Bacterium coli* were studied. All were treated with chloramphenicol. Virus inclusion bodies were found before treatment in 6 cases, and pleuropneumonia-like organisms in 5. Virus inclusion bodies were also found in 2 of the consorts. The pleuropneumonia-like organisms disappeared in all cases; the inclusion bodies disappeared in some cases. The treatment failed in 4 cases, and toxic symptoms due to the chloramphenicol were observed in 4 cases.

The results observed in this small series suggest that chloramphenicol is a satisfactory drug to employ in treating inclusion urethritis. No clear conclusions, however, can be said to have emerged so far, either as to the precise relationship of these organisms to non-gonococcal urethritis and to Reiter's disease, or as to an established optimum line of treatment. Investigations are proceeding. *James Kemble*

292. **Therapy of Gonococcal Arthritis**
P. O. HAGEMANN, A. HENDIN, H. H. LURIE, and M. STEIN. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 77–89, Jan., 1952. 49 refs.

The authors describe the clinical characteristics of gonococcal arthritis and outline the developments which have taken place in its treatment, pointing out that therapeutic results have improved materially since the introduction of antibiotic agents. In discussing diagnosis they suggest that where there is a history of gonorrhoea, or direct or indirect evidence suggestive of gonococcal infection, a definite response to penicillin should be regarded as proof of diagnosis, although there are some exceptions. On the other hand, post-gonococcal rheumatoid arthritis may be identified by the lack of response to penicillin therapy. Recently aureomycin and streptomycin have been successfully used in the treatment of gonococcal urethritis, but it is suggested that these agents should be reserved for the rare case of penicillin-resistant infection.

An analysis is presented of a series of 30 cases of gonococcal arthritis treated at 3 hospitals in St. Louis, Missouri, between 1943 and 1950, in which 28 of the 30 patients had a definite history of genito-urinary gonorrhoea, and the remaining 2 were females of " questionable character ". A positive urethral or cervical smear and/or culture was obtained in 17 cases; in 8 cases these tests were negative, and in 5 they were not performed. Of the 8 patients with negative local findings 6 had received sulphonamides or antibiotics before admission to hospital; altogether 13 patients developed arthritis in spite of previous treatment with sulphonamides or antibiotics or both. The interval between the genito-urinary infection and the development of joint symptoms varied from 2 days to 23 years, and the latter had been present for 2 to 120 days before treatment was started. All but 6 of the patients had had migratory joint pains at the onset. Only 4 developed persistent mono-arthritis, the remaining 26 having 2 or more joints involved. Gonococci were found in the joint fluid in 5 cases, by direct smear in one case, and by culture in 4. The gonococcal complement-fixation reaction was positive in 14 cases on admission and in another 10 subsequently; it was negative in 4 cases, and was not performed in 2 cases. This test was also carried out on the synovial fluid in 6 cases, with positive results in 3. *X* rays revealed joint destruction in only 2 cases, in each of which a positive joint culture was obtained. Electrocardiograms were taken in 10 cases, but all were within normal limits.

Penicillin was given to each patient in the series in a total dosage which ranged from 0·3 to 28·04 mega units, the average being 5·5 mega units; 4 patients also received intra-articular penicillin and 5 received additional therapy, including sulphonamides, artificial fever, aureomycin, and streptomycin. A combination of aureomycin and streptomycin was used in treating one case of penicillin-resistant gonococcal arthritis. In general the results were satisfactory, and only in 3 cases was there apparent penicillin resistance. The immediate response to penicillin in the remaining 27 was dramatic. All 30 patients were bacteriologically cured at the time of discharge, though 11 of the 30 had some degree of impairment of joint function. *H. S. Laird*

293. **The Effect of ACTH on the Jarisch–Herxheimer Reaction and on the Lesions of Experimental Syphilis in the Rabbit**
W. H. SHELDON, A. HEYMAN, and L. D. EVANS. *American Journal of Syphilis, Gonorrhea and Venereal Diseases* [*Amer. J. Syph.*] **36**, 77–81, Jan., 1952. 2 figs., 9 refs.

ACTH (corticotrophin) fails to inhibit or suppress the morphological changes of the Herxheimer reaction produced by penicillin in experimental syphilis in the rabbit. It thus acts in syphilis as in tuberculosis, where neither cortisone nor ACTH abolishes the tuberculin skin reaction in animals with active tuberculous infection.
G. M. Findlay

294. **Treatment of Syphilis with Aureomycin and Chloromycetin**
S. R. TAGGART, M. J. ROMANSKY, and G. S. LANDMAN. *American Journal of Syphilis, Gonorrhea and Venereal Diseases* [*Amer. J. Syph.*] **36**, 174–178, March, 1952. 3 refs.

See also Cardiovascular System, Abstract 166.

The Rheumatic Diseases

295. **Rheumatic Fever in Young Adults**
W. T. ZIMDAHL. *British Heart Journal* [*Brit. Heart J.*] **14**, 70–76, Jan., 1952. 15 refs.

The author presents a study of 202 military patients between the ages of 17 and 39 suffering from rheumatic fever. Of these, 162 had the first attack of rheumatic fever after enlistment. The attack was preceded by an upper respiratory infection in 137 cases, and by scarlet fever in 19 cases. Each case was investigated by all available means, and an elevated erythrocyte sedimentation rate (E.S.R.) was found to be the most valuable means of assessment of rheumatic activity. There was a possible correlation between a prolonged rise in E.S.R. and the development of carditis. Of the patients 95 (53%) developed murmurs during the period of observation: a presystolic murmur developed in 7 cases and an aortic distolic murmur in 15 cases. Some account of other complications of rheumatic fever is given. Thus 8 patients developed pericarditis and 7 had nodules; pneumonitis was a rare finding. A prolonged P–R interval was the most frequent electrocardiographic abnormality. In 13 cases a sinus bradycardia at a rate of 42 to 58 developed, and in half of these patients significant cardiac damage developed. In a few cases the clinical course was that of rheumatoid arthritis.

It is stressed that rheumatic fever is a clinical diagnosis, and active rheumatism may occur in the absence of pyrexia or a raised E.S.R. *James W. Brown*

296. **The Treatment of Rheumatic Carditis with Intra-arterial Injections of Streptococcal Anavaccine.** (À propos du traitement du rhumatisme cardiaque par des injections intra-artérielles d'ana-vaccin streptococcique)
M. DEBRAY, R. WATTEBLED, J. BERTRAND, and B. MALAPERT. *Semaine des Hôpitaux de Paris* [*Sem. Hôp. Paris*] **28**, 51–57, Jan. 6, 1952. 3 figs., 4 refs.

From a review of the literature the authors conclude that rheumatic carditis is due to sensitization of the arterial system following streptococcal infection, and describe the results of attempting desensitization in 82 cases. The method used was the injection of gradually increasing doses of " cardiostreptine " into the femoral artery. Technique and dosage are described in detail.

Reactions included mild temporary increase in temperature, dyspnoea, precordial or left chest pain, gallop rhythm, and an erythematous rash. Immediate results in 71 patients aged more than 16 years showed improvement in varying degree. Those with marked valvular involvement benefited least. In 11 children results were inconclusive, and 2 died during treatment. Of 42 patients followed up for 2 to 4 years, all maintained the initial improvement and had no relapse of the cardiac condition, although 18 had experienced some joint pain of a temporary nature. *Kathleen M. Lawther*

297. **Protein-binding Properties and Clinical Effects of 3-Hydroxy-2-phenylcinchoninic Acid**
B. V. JAGER. *Bulletin of the Johns Hopkins Hospital* [*Bull. Johns Hopk. Hosp.*] **90**, 121–130, Jan., 1952. 13 refs.

During a period of 16 months a total of about 18,000 tablets of 3-hydroxy-2-phenylcinchoninic acid (HPC) were used in clinical trials (mostly on patients suffering from so-called collagen diseases) at the University of Utah College of Medicine. In the 21 cases of rheumatoid arthritis treated the daily dosage varied from 15 to 50 mg. per kg. body weight for periods up to 16 months, whereas 3 patients with rheumatic fever received between 22 and 36 mg. per kg. for 10 to 42 days. Two patients with scleroderma, 4 with disseminated lupus erythematosus, one with gouty arthritis, and 2 with osteo-arthritis were also treated.

The author was able to confirm the finding of other workers that HPC is a useful agent in the treatment of rheumatoid arthritis, but he doubts whether it is superior to sodium salicylate in the treatment of rheumatic fever; nor was he impressed with its efficacy in disseminated lupus erythematosus and scleroderma. Side-effects were mainly confined to toxic skin reactions and diarrhoea, and it is suggested that the high incidence of the former could be accounted for by exposure to sunlight (all patients were ambulant). Experiments *in vitro* showed that the protein-binding ability of HPC was greater for serum albumin than for serum globulin or mucoprotein.
D. Preiskel

RHEUMATOID ARTHRITIS

298. **The Administration of ACTH by Continuous Intravenous Infusion.** (L'administration de l'ACTH en perfusions veineuses continues)
M. LINQUETTE, M. GOUDEMAND, P. PRUVOT, and A. LORRAIN. *Presse Médicale* [*Pr. méd.*] **60**, 117–118, Jan. 26, 1952.

ACTH was given by continuous intravenous infusion to 11 patients with chronic polyarthritis (including 2 cases of psoriatic arthritis) and to 4 with severe asthma. The technique of choice was to introduce a polyethylene catheter into one of the saphenous veins; with the use of heparin, infusion could be continued for periods up to 20 or 30 days. The usual dose of ACTH was 5 mg. daily, given in 1 litre of isotonic glucose solution (saline being contraindicated by the risk of oedema), but signs of overdose in some cases demanded a reduction to 3 mg. daily.

A striking diminution in pain and increase in mobility were observed in all the patients with arthritis, usually by the first day and invariably by the second, even in cases in which treatment with ACTH intramuscularly

had had little effect or in which doses of 75 mg. or more daily, given intramuscularly, were necessary to produce even partial remission. The patients with asthma were almost completely relieved after 2 days' treatment. Depression of the eosinophil count and lowering of the erythrocyte sedimentation rate were achieved more constantly than with intramuscular ACTH, but the incidence of induced hormone resistance and of relapse following cessation of treatment appeared undiminished. Complications were essentially those typical of ACTH therapy and of intravenous infusion. *H. McG. Giles*

299. **The Reversibility of Certain Rheumatic and Non-rheumatic Conditions by the Use of Cortisone or of the Pituitary Adrenocorticotropic Hormone**

P. S. HENCH. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 1–38, Jan., 1952. Bibliography.

300. **Observations on Prolonged Cortisone Administration in Rheumatoid Arthritis**

W. S. C. COPEMAN, O. SAVAGE, P. M. F. BISHOP, E. C. DODDS, A. E. KELLIE, J. W. STEWART, J. H. H. GLYN, A. A. HENLY, and J. M. TWEED. *British Medical Journal* [*Brit. med. J.*] **1**, 397–403, Feb. 23, 1952. 4 figs., 11 refs.

The authors report the results of prolonged cortisone administration in 20 cases of active rheumatoid arthritis at the West London Hospital.

On starting treatment 10 of the patients were given 300 mg. of cortisone on the first day, 200 mg. on the second, 150 mg. on the third, and then 100 mg. daily, whereas the other 10 patients were given 100 mg. daily from the start; the authors prefer the latter dosage. When the disease process appeared to be satisfactorily under control, the daily dose was reduced by 12·5 mg. at a time until the minimum maintenance level was found. A reduction every 2 or 3 days was too rapid, and every 5 or 7 days was found to be a more satisfactory interval. The maintenance dose varied widely (between 37·5 mg. and 100 mg. daily) from case to case, but remained within a fairly narrow range for each individual.

Clinical results are reported as good in 12 and fair in 5 cases, these 17 patients being able to resume their previous work. In 3 cases the results were poor: in one of these administration had to be stopped because of the development of Cushing's syndrome, while in the others the permanent joint damage was too severe for improvement. In all cases the side-effects were considered by the authors to be slight: 7 patients developed injection abscesses, 5 a mild Cushing's syndrome, and 4 fluid retention. Haematological studies in 3 cases showed an increase in circulatory reticulocytes during the second week, followed by a rise in haemoglobin level and erythrocyte count to normal figures. A diminution in plasma control occurred in all 3 patients.

The authors' general conclusion is that when permanent joint damage is absent or slight, patients recover sufficiently under cortisone treatment to return to their work, but that the treatment has little effect when extensive joint damage is present. Administration has to be continued indefinitely, although occasionally a long remission may follow its cessation. They consider that much significance need not be attached to mild side-effects. *Kenneth Stone*

301. **Antirheumatic Effects of Hydrocortisone (Free Alcohol), Hydrocortisone Acetate, and Cortisone (Free Alcohol) as Compared with Cortisone Acetate. Results from Oral Administration in Patients with Rheumatoid Arthritis**

E. W. BOLAND. *British Medical Journal* [*Brit. med. J.*] **1**, 559–564, March 15, 1952. 31 refs.

The author has previously reported the results of prolonged uninterrupted cortisone therapy in a series of patients with rheumatoid arthritis (*Brit. med. J.*, 1951, **2**, 191; *Abstracts of World Medicine*, 1951, **10**, 534). By using initial suppressive dosage and then gradually reducing the amounts in step-like fashion it proved possible to retain satisfactory, although incomplete, control of the disease in approximately two-thirds of the patients with a small maintenance dose. In those cases, however, in which the disease was severe the high dosage required for its control often could not be tolerated owing to unwanted side-effects of various types. Therapeutic limitations of this nature have led investigators to search for steroidal substitutes which might possess similar anti-rheumatic properties. Most of these have proved therapeutically inert, the only exception being Kendall's Compound F, which is now called " hydrocortisone " (17-hydroxycorticosterone).

In this paper the author reports the results of comparative tests of the anti-rheumatic effects of hydrocortisone (free alcohol), hydrocortisone acetate, cortisone (free alcohol), and cortisone acetate given orally for short periods to small groups of patients with rheumatoid arthritis. Their relative potencies were assessed by comparing the clinical response to initial suppressive doses (150 to 200 mg. daily for 2 days followed by 100 mg. daily) of each drug in the same patient, and by determining the maintenance dose of each required to uphold a similar degree of clinical improvement. Hydrocortisone (free alcohol) was found to possess the greatest anti-rheumatic activity when given by mouth, and its action appeared to be more rapid than that normally expected with cortisone acetate. The relative incidence of endocrine side-effects from the various preparations could not be estimated in these short-term studies with any accuracy. *W. S. C. Copeman*

302. **Hydrocortisone and Cortisone Injected into Arthritic Joints. Comparative Effects of and Use of Hydrocortisone as a Local Antiarthritic Agent**

J. L. HOLLANDER, E. M. BROWNE, R. A. JESSAR, and C. Y. BROWN. *Journal of the American Medical Association* [*J. Amer. med. Ass.*] **147**, 1629–1635, Dec. 22, 1951. 3 figs., 13 refs.

The authors describe the effect of intra-articular injections of cortisone and of hydrocortisone in cases of rheumatoid arthritis and also in a variety of other arthritic and peri-arthritic conditions. In rheumatoid arthritis one knee was usually the joint injected, the other knee being used as a control. Cortisone acetate (25 mg.)

had no consistent beneficial local effect in 17 injections, but hydrocortisone acetate (25 mg. or 37·5 mg.) was immediately efficacious in reducing joint temperature, swelling, and pain in all of the 178 injections made. The duration of this effect varied from 2 days to 10 weeks, but in most cases was from 6 to 8 days.

The authors then used intra-articular hydrocortisone in the treatment of cases of osteoarthritis (mainly of knees, but also in some other joints), acute traumatic arthritis, acute gouty arthritis, and various inflammatory conditions of bursae (including the subdeltoid bursa). They found that the injections caused dramatic relief of pain and recovery of mobility, more marked and often more permanent in the more acute conditions.

It is suggested that the reason for the difference in effect of cortisone and hydrocortisone may be found in their relative solubility. Whereas cortisone is slightly less soluble in water than hydrocortisone, it is about seven times as soluble in plasma and therefore, presumably, in synovial fluid. The relative insolubility of hydrocortisone may enhance its local effect by ensuring slower dispersion from the joint. *B. E. W. Mace*

303. **Effect of Anti-rheumatic Drugs on Synovial Membrane Permeability**

W. D. Paul, R. E. Hodges, R. W. Knouse, and C. S. Wright. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **79**, 68–71, Jan., 1952. 2 figs., 5 refs.

It has been stated that corticotrophin and cortisone inhibit synovial permeability, and that their beneficial action in the rheumatic affections is due to this action. The authors, working at Iowa University, attempted to confirm this in animal and human experiments.

Phenolsulphonphthalein (PSP) was injected into the ankle-joint of rabbits and constant hydration maintained; bladder contents were withdrawn at 15-minute intervals for 2 hours. Urinary dye content was measured by spectrophotometric methods. Treated animals received corticotrophin and cortisone in varying doses, either for some days before, or on the day of, experiment; some animals were given intra-articular cortisone. Renal function as assessed by intravenous injection and subsequent urinary assay of the dye was unaltered by hormone therapy.

In the human study PSP was injected into the knee-joint of patients with rheumatoid arthritis. Both corticotrophin and cortisone were given in therapeutic doses, and the experimental technique as for animals was used. Urinary excretion of the dye was estimated before and during parenteral and intra-articular injection of the antirheumatic agents. The effect of intra-articular hyaluronidase on synovial permeability was also observed.

The time for maximum or total excretion of PSP was not significantly influenced by parenteral corticotrophin or cortisone in man or animals. Intra-articular cortisone caused marked retardation of dye excretion, but particulate blocking effect cannot be excluded. Hyaluronidase alone, or with parenteral hormonal therapy, did not alter dye excretion. Maximal clinical response to these drugs in rheumatoid arthritis was not accompanied by changes in joint permeability to PSP.

The authors, though not denying that the drugs under study alter synovial permeability, suggest that the PSP test is indequate. *J. N. Harris-Jones*

304. **Agglutination Test for Rheumatoid Arthritis**

D. Hobson and R. H. Gorrill. *Lancet* [*Lancet*] **1**, 389–392, Feb. 23, 1952. 16 refs.

The test for rheumatoid arthritis described in this paper involves the agglutination of sheep's erythrocytes sensitized with haemolytic serum. Horse serum was generally used for this purpose, but erythrocytes and serum from other species were found equally reliable.

Patient's serum in dilutions of 1 in 10 to 1 in 20 was added to the sensitized cells and the mixture incubated for 1 hour at 37° C. The end-point was taken as that serum dilution which gave agglutination just visible to the naked eye. Accepting a titre of 1 in 30 as normal, the titre in 85% of patients with rheumatoid arthritis was raised, while only 13% of control specimens from patients with other diseases gave a raised titre.

Destruction of the fourth component of the serum complement removed agglutinating activity from the serum. *G. Loewi*

305. **The Differential Sheep-cell Agglutination Test in Rheumatoid Arthritis**

F. E. T. Scott. *Lancet* [*Lancet*] **1**, 392–395, Feb. 23, 1952. 11 refs.

The author, at the Canadian Red Cross Memorial Hospital, Taplow, Bucks, uses sheep's erythrocytes and rabbit anti-sheep serum in the differential agglutination test (D.A.T.) for rheumatoid arthritis. Two sets of inactivated serum dilutions are made from 1 in 4 to 1 in 2,048. Sensitized erythrocytes are added to one set and washed erythrocytes to the other. Tubes containing the suspension are placed in a water-bath for 1 hour at 37° C. and left in a refrigerator overnight, results being read early the next morning. The result of the test is expressed as the ratio of the reciprocals of the titres of the two sets of readings; a titre of 1 in 16 or higher is considered positive.

Of 124 tests on patients with rheumatoid arthritis, the results in 60% were positive, but only 13·5% of those in cases of Still's disease were positive. No positive reactions were obtained from patients with rheumatic fever and heart disease. Of 34 cases of other types of arthritis, only one was positive. Positive results were obtained in 2 cases of disseminated lupus erythematosus and one of infective hepatitis, whereas serum from patients with a variety of other diseases and all healthy control subjects gave a negative reaction. A modification of the test, involving absorption of the serum, gave increased sensitivity, but a loss of specificity. No relationship could be established between the activity and duration of disease, or the age of the patient, and the level of the D.A.T.

The author concludes that the test has a definite place in the differential diagnosis of arthritis, but that a negative reaction does not necessarily exclude rheumatoid arthritis. *G. Loewi*

Traumatic Surgery and Orthopaedics

306. **Shock Therapy with Intraperitoneal Infusion of Blood Volume Replenishers, Dextran and PVP**
J. K. NARAT, P. A. CASELLA, and J. P. CANGELOSI. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 80–91, Jan., 1952. 6 figs., 29 refs.

In this paper are reported a series of experiments on rats, dogs, and rabbits undertaken to assess the value of intraperitoneal administration of 3·5% polyvinylpyrrolidone (PVP) in Ringer's solution and of 6% dextran. It was shown that the administration of both these agents has a resuscitating effect on dogs after production of haemorrhagic shock; that it is a safe procedure, unless dosage is excessive; and that both agents are absorbed well from the peritoneal cavity. Although its rate may be erratic and unpredictable, absorption is usually complete within 24 hours. Dextran disappears more slowly than PVP.

It is stressed that administration of such blood-volume replenishers may restore the normal volume, but not the normal composition, of the blood, and their main value therefore lies in their haemodynamic effect, which is of great importance in the treatment of shock.

Though the number of experiments is too small for any definite conclusions to be drawn, the authors are of the opinion that the use of dextran and PVP by intraperitoneal drip may be of value in the following conditions: haemorrhagic shock, imminent shock, nutritional disturbances, malignant disease, mesenteric venous thrombosis, strangulation of the intestines, extensive burns, and myocardial deficiency.

The finding of foam cells in the liver and spleen of rats given larger doses or subjected to frequently repeated administration prompts the authors to issue a warning against such excesses, at least until more light is shed on the significance of such morphological changes.

Harold C. Edwards

307. **The Pathogenesis, Prognosis, and Treatment of Traumatic Myoglobinuria.** (Zur Pathogenese, Prognose und Therapie traumatischer Myoglobinurien)
B. JASÍNSKI and H. BRÜTSCH. *Schweizerische Medizinische Wochenschrift* [*Schweiz. med. Wschr.*] **82**, 29–33, Jan. 12, 1952. 9 figs., 24 refs.

Two fully documented cases of the rare condition of traumatic myoglobinuria are recorded, accompanied by detailed analyses of the pathology and treatment.

The first case arose spontaneously in a man of 43 who lay out all night in a wood in the month of September. He awoke to find both legs swollen and extremely painful. The swelling increased, with generalized muscular pain, and was greatest in the calf muscles, which became enormous. It was not until the 4th day that the urine diminished in quantity, with a strongly positive benzidine reaction and a deposit of brown flaky pigment. Spectroscopy showed the presence of myoglobin. The myoglobinuria itself persisted for only 24 hours, but the flow of urine remained very diminished for the next 5 days, with threatened uraemia. By the 11th day of the illness the flow had spontaneously increased, and thereafter the condition rapidly improved. In a biopsy specimen from the calf muscle necrosis was demonstrated, but by the end of 3 months regeneration had so far progressed that the patient was able to walk for 3 hours, and there were no residual contractures. The second case was that of an electrician of 35 years of age through whose body passed a current of 29,000 volts. In addition to various electrical burns on the body there was an area of localized necrosis in the muscles of the right forearm, and very considerable shock. In this case the urine from the start was coloured brown by the presence of myoglobin, which had disappeared again 6 hours later. There was at no time any question of anuria; amputation of the forearm was eventually required.

In the analysis the following points are stressed: (1) Inasmuch as the degree of exposure experienced in the first case does not normally give rise to severe necrosis of muscle, it must be presumed that the liability to myoglobinuria was innate and that the exposure merely released the trigger. (2) The outstanding symptoms of myoglobinuria are shock, oliguria, and liberation of muscle pigments. The initial oliguria is due less to mechanical blockage of the renal tubules by myoglobin than to deficient oxygenation of the kidneys during the period of shock and the toxic effects of the released myoglobin. The mortality is high—in the early stages from shock, and later from uraemia. The possibility of potassium set free from the necrosed muscle, or porphyrin from the myoglobin, acting as a toxic agent and causing death is discussed and dismissed. The rate of muscle destruction, as shown by the time of appearance of myoglobin in the urine, is of clinical importance. The later and slower it is, the less is the liability to shock, whereas an acute necrosis, such as existed in the second case, will give a degree of shock comparable to that produced by haemolysis during transfusion.

The treatment of myoglobinuria is directed towards combating the shock and re-establishing the normal alkali reserves of the body, which become much reduced. It is essential also that the urine should be kept alkaline, for myoglobin, as also haemoglobin, remains in solution in alkaline urine and will be excreted. There will then be no danger of mechanical blockage of the tubules by the brown flaky deposit (of metaglobin or of myohaematin) which readily forms if the urine is acid. The administration of 30 g. of sodium bicarbonate in 24 hours, preferably by intravenous infusion, should be sufficient gradually to alkalinize the urine, but such alkalinization requires constant checking of the alkali reserve of the blood, whatever the reaction of the urine since, with severely damaged kidneys, the alkali will not readily be excreted. If the above quantity is not sufficient, any

increase must be made most cautiously, on account of the danger of overdosage. In view of the work of Trueta and others the early use of sympathicolytic agents, such as the hydrogenated alkaloids of ergot, is recommended in order to release any associated vasoconstriction in the kidney. If anuria should supervene in spite of early and energetic treatment, a paravertebral block is advised, with the object of increasing the supply of blood to the kidney. *D. P. McDonald*

308. **Abdominal Trauma**
F. G. STOESSER and R. E. SMITH. *New York State Journal of Medicine* [*N.Y. St. J. Med.*] **51**, 2887–2891, Dec. 15, 1951. 6 refs.

The authors present an analysis of 51 cases of abdominal trauma, representing an incidence of 0·088% in the total number of 57,634 patients admitted to a hospital in New York State during the 5-year period 1946–50. The recommended procedure [in which there is nothing new] included the following well-known and generally accepted points: close observation of the patient; early and vigorous treatment of shock; avoidance of overdosage of narcotics; early recognition of visceral injuries and their urgent repair; adequate use of antibiotics before and after surgery; catheterization to detect damage to the urinary tract; vigorous treatment of post-operative pulmonary complications. In the series reported there were 6 deaths—a mortality of 11·96%.
W. Mestitz

EFFECTS OF COLD

309. **Cold Injury in Korea**
J. C. WATTS. *Journal of the Royal Army Medical Corps* [*J. R. Army med. Cps*] **98**, 1–7, Jan., 1952. 4 refs.

An account is given of 152 cases of frostbite among British Commonwealth troops in the Korean campaign during the winter of 1950–1 and the treatment of this condition is discussed. The cases are divided into four types: incipient, slight, moderate, and severe.

(1) *Incipient*—41 cases, in which there were no skin changes, but the patients complained of numbness and paraesthesiae. The treatment was with simple contrast baths twice daily and foot exercises hourly. Complete recovery was the general rule, but an adequate follow-up was not possible.

(2) *Slight*—32 cases, with reddening or brownish pigmentation and symptoms as above. The patients were kept in bed with the feet exposed to the air until blanching of the nails was obtained on pressure. They were then treated as for incipient cases. Where severe hyperhidrosis occurred, a foot powder containing 1/6 part of camphor was used. The average stay in hospital was 9 days, and the patient's medical category was reduced for 3 months.

(3) *Moderate*—61 cases, with vesiculation and/or patchy blackening of the skin. These patients were given one mega unit of penicillin intramuscularly, the blistered area was cleansed with " cetavlon " (cetrimide), and the dead superficial skin removed. The patient was then returned to bed, and the feet elevated and exposed to the air. No dressing was applied, but penicillin therapy was continued until a flexible black crust had formed, and exposure until the crust flaked off, which took 4 to 6 weeks. Separation was usually complete in 6 to 9 weeks. Contrast baths were used as soon as it was clear that there was no loss of tissue and the crusts had disappeared. The average stay in hospital was 36 days, and a longer period of downgrading was usually necessary.

(4) *Severe*—18 cases, with blackened and shrivelled extremities. The initial treatment was exposure and bed rest, with elevation of the limb if oedema was present. Surgery was not undertaken until separation of the tissues had started. In cases with loss of tissue the dead tissue was removed and any protruding bone excised, followed by immediate skin grafting, with parenteral administration of 1 mega unit of penicillin. Split-skin postage-stamp grafts were laid on the raw areas, no dressings applied, and exposure continued. Patients with loss of toes, those with split-skin grafting on the feet, and those who would later require further plastic surgery, were invalided home as soon as complete skin cover was achieved. All but 4 of these 18 patients were evacuated from the theatre of operations. The average stay in hospital of the 4 remaining was 74 days, and was followed by a 6-month period of downgrading.
Harold C. Edwards

310. **Local Cold Injury—Frostbite**
R. B. LEWIS. *Military Surgeon* [*Milit. Surg.*] **110**, 25–41, Jan., 1952. 20 figs., 34 refs.

The author carried out experiments on rabbits to elucidate the mechanism whereby exposure to cold causes necrosis of tissue, there being two possibilities: (1) that injury occurs as a secondary result of vascular lesions—vasoconstriction, vasodilatation, oedema, or sludging of erythrocytes or thrombosis in the capillaries; and (2) that it is due to a direct action of cold on tissue cells. In the first group of 60 animals one leg of each was exposed to a temperature of −12° C. in an alcohol bath for 30 minutes, which gives rise to necrosis of muscle, but not of skin, and the muscles of both legs were examined microscopically in animals killed at intervals ranging from 15 seconds to 8 days after the freezing. It was demonstrated that tissue injury begins immediately after exposure to cold and progresses to necrosis, and that ischaemia plays no part in these changes, since ischaemia must be maintained for 3 to 3½ hours to produce necrosis in rabbits' legs, whereas severe muscle degeneration was evident 2 hours after freezing. Furthermore, thrombosis was not seen earlier than 24 hours after exposure, whereas evidence of degeneration of muscle was demonstrable within 15 minutes. It was further demonstrated that cold injury causes the same pathological changes as does injury by heat.

Further experiments were carried out to test the therapeutic efficacy of heparin, which was found to be without effect; cortisone, which similarly was useless; and rapid and prolonged rewarming in water at 42° C. This last method showed the best results, which were

significantly better than those obtained by slow spontaneous thawing at room temperature in control animals. One hour appeared to be the optimum time of immersion of the frozen limb in the rewarming bath. The incidence and severity of the complications of weight loss and severe diarrhoea commonly seen after frostbite were both less after rapid and prolonged rewarming than after slow spontaneous thawing.

[This is an extensive and valuable series of experiments with important practical implications.]

Peter Martin

311. **The Active Therapy of General Exposure to Cold.** (Активная терапия общего охлаждения (замерзания) в свете клинических наблюдений)

A. V. Orlov. *Клиническая Медицина* [*Klin. Med., Mosk.*] **29**, 28–36, Dec., 1951. 3 figs., 14 refs.

The author criticizes the old and long-accepted doctrine of " slow warming " in cases of freezing, and claims that a Russian military doctor, Lapchinskii, proved in 1880 by experiments on dogs the safety and effectiveness of rapid warming.

The author then describes 73 cases of exposure to cold in arctic regions, 18 of which were mild, 32 severe, and 23 very severe (he classifies these three stages as adynamic, stuporous, and convulsive). The patient was admitted at once into a warm room at a temperature of 28° to 30° C., and after full examination, careful cleansing of mouth and throat, and injections of nikethamide (2 ml. subcutaneously), adrenaline (1 ml. of 0·1% solution intramuscularly), and 50 ml. of 40% glucose solution (previously warmed to body temperature) intravenously, was immersed in a hot bath at 40° C. and vigorously massaged. Only 3 of these patients died. The majority of cases of freezing result from malnutrition or alcoholism and this introduces complications which have to be dealt with after recovery from exposure. [Presumably the author was not dealing with insufficiently clad persons, mountaineers, or victims of immersion in cold water.] The factors which increase the dangers of exposure to cold are: diminished muscular movement, lowered metabolism, and increased heat loss from vasodilatation. These factors are all present in alcoholism, which accounts for 36 to 39% of all deaths from exposure.

[The author may not be aware that similar therapeutic results were obtained by the Nazis in the course of experiments performed on Jews and Polish or Russian prisoners of war, in which the subjects were plunged into ice-cold water and left there for varying periods. His methods have of course been accepted in Britain for some years, and the application of heat to the nape of the neck is especially effective—presumably by early restoration of function to the medullary centres.]

L. Firman-Edwards

312. **Microwave Diathermy Treatment of Frostbite**

R. B. Lewis. *Proceedings of the Society for Experimental Biology and Medicine* [*Proc. Soc. exp. Biol., N.Y.*] **78**, 163–165, Oct., 1951. 9 refs.

FRACTURES AND DISLOCATIONS

313. **Treatment of Bilateral Fractures of the Edentulous Mandible**

J. B. Erich. *Plastic and Reconstructive Surgery* [*Plast. reconstr. Surg.*] **9**, 33–41, Jan., 1952. 9 figs.

In this paper is described a method of treatment of fresh bilateral fractures of the edentulous mandible, associated with displacement of the fragments, in which the patient's dentures are used as splints. If the fractures are at or in front of the first molar, it is enough, it is claimed, to fix the lower denture to the mandible by the use of one circumferential wire for each posterior fragment and two wires for the anterior fragment. Intermaxillary fixation is considered unnecessary in such cases.

If the fractures are behind the first molar, the denture is wired to the anterior fragment only and intermaxillary fixation is employed. This is achieved by first fixing the upper denture in its proper position by two wires attached to the premolar region of the denture which pass through the cheeks to be attached to adjustable fittings incorporated in a plaster-of-Paris head-cap. Reduction is effected by intermaxillary traction applied by placing elastic rubber bands between hooks on hooked arch-bars previously wired to the teeth of both dentures. When the anterior fragment is returned to its normal position " the two posterior fragments assume a fairly normal relationship to the anterior fragment " and require no fixation. The technique of inserting the circumferential and cheek wires and the construction of the head-cap are described.

When usable dentures are not available, open reduction or external pinning must be resorted to. [In view of this statement, it may be as well to mention that the method of using a circumferential wire in the lower and a peralveolar wire in the upper jaw, preferably with Gunning's splints, described by Kelsey Fry *et al.* in *The Dental Treatment of Maxillo-facial Injuries* (Oxford, 1942–3) has been successfully used for such cases in Great Britain for a number of years.] *V. E. Ireland*

314. **Immediate Treatment of Compound Fractures of the Upper End of the Humerus with an Acrylic Prosthesis.** (Traitement immédiat des fractures complexes de l'extremité supérieure de l'humérus par prothèse acrylique)

G. Edelmann. *Presse Médicale* [*Pr. méd.*] **59**, 1777–1778, Dec. 25, 1951. 6 figs.

The success of the Judet hip arthroplasty has encouraged the development of a similar method for replacing the head of the humerus. In the cases reported the hip prosthesis was used in the first instance, but later was replaced by a special prosthesis in which the axis of the head was inclined at 135 degrees to the axis of the shaft, while the stem carrying the head was made detachable to facilitate insertion. The approach used was by the usual delto-pectoral route. The fragmented head of the humerus was detached from its muscular attachments, the muscular bellies being anchored by a stitch

to facilitate their control as it was found that they were inclined to retract out of reach; the artificial head is canalized for their subsequent re-attachment. The instability of the immediate post-operative result has not proved a source of trouble, the tissues tightening up readily and no tendency to dislocate being apparent. Exercises should start at the end of the 7th day. A remarkable post-operative feature has been the relative painlessness, and this has encouraged early activity. The operation was carried out on 6 patients, 5 elderly females and one elderly male, with excellent results compared with those of the routine treatment.

The cases in which this method may be considered are: (1) when part of the humeral head is detached and irreducible; (2) when the humeral shaft is grossly displaced and cannot be reduced; or (3) when the head is completely fragmented. The indication for the use of the prosthesis is the state of the humeral head. If this is intact it should be replaced, and fixed if necessary with a Smith-Petersen pin. If the head is fragmented: (*a*) with a high fracture line, leaving some of the greater tuberosity intact, resection of the detached portion of the head only should be carried out, as the retention of any remaining muscular attachments is functionally important; (*b*) with a low fracture line, the head should be removed and replaced with a prosthesis.

[It seems highly probable that this procedure will eventually establish itself as the ideal treatment for certain complicated cases of fractured head of the humerus which result in much stiffening of the shoulder. The indications given by the author for operation indicate a conservative attitude towards the procedure, and the abstracter feels sure that when other surgeons have had experience of the method, and its limitations become better known, it will become a routine procedure.]

J. G. Bonnin

315. **Primary Osteotomy for the Treatment of Intracapsular Fracture of the Neck of the Femur**

F. J. Ankner and M. C. Nelson. *Annals of Surgery* [*Ann. Surg.*] **135**, 69–78, Jan., 1952. 5 figs., 4 refs.

The authors describe an operative method of treating intracapsular fracture of the femoral neck which is intended to reduce the high incidence of non-union of this fracture. [From the diagrams given it is clear that the treatment was used for subcapital fractures with the fracture line 50 degrees or more from the horizontal line (Linton).] The operation consists in: (1) reduction of the fracture; (2) cuneiform osteotomy and removal of a wedge with a base of 1 inch (2·5 cm.) and its apex at the lesser trochanter; (3) insertion of the bone of the wedge, cut up into fragments the size of a pea, into the medulla; and (4) fixation of the head, trochanteric fragment, and shaft by a plate attached by 3 long screws to the head, and by short ones to the shaft. The patient is allowed up on crutches after 5 days, but full weight-bearing is not permitted until bony union is shown on radiographs.

The follow-up of 45 patients was undertaken, all having been treated more than 6 months previously. Their average age at operation was 71, only 3 being under 60; 4 had died in hospital and 8 subsequently, and one patient was untraced. The primary reduction was satisfactory in 27 of the remaining 32 patients. Avascular necrosis had developed in 3 cases, with non-union in 2 of these, there was absorption of half or more of the neck in 10 cases, and osteo-arthritis of the hip in 2. The authors find it difficult to compare their results with those obtained with internal fixation after reduction, as the obliquity of the fracture is seldom recorded in published series. In one small group of cases with comparable obliquity treated with screws or trifin nails bony union occurred in fewer than half.

The authors do not draw any conclusions, but publish this record of their work as a basis for discussion.

[The reader will appreciate the realization, by the present authors at least, that this type of fracture does not always unite after satisfactory reduction and internal fixation. The operation described, however, hardly appears to provide the solution of this problem, although it is recognized that osteotomy without internal fixation is good treatment for the oblique fracture at a lower level in the neck. The principle, however, is different in such cases.] *St. J. D. Buxton*

316. **The Kuntscher Nail in the Treatment of Fractures of the Tibia and Fibula**

J. E. M. Thomson. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 189–194, Feb., 1952. 5 figs.

The author points out that there is an appropriate but very limited place for the treatment of fractures of the tibia by means of a Kuntscher nail. The disadvantage of this method is that it is not a complete fixation in itself and has to be used with plaster as a secondary fixing agent.

The nail can be of help in maintaining correct length and alignment in a comminuted fracture of the tibia of extreme severity where the fragments can be threaded over the nail. The author suggests that in ununited fractures treated by this method cancellous chips should be packed round the fracture site. One of the main drawbacks of this type of treatment is the cost of having in stock all the possible sizes of intramedullary nails. The result will be a failure if a nail of correct length, size, and shape is not used. A method of fixing the upper end of the nail by a bone wedge is described. Nailing was used for internal fixation in 22 of the author's cases, some of which are described and illustrated. *K. H. Pridie*

317. **Traumatic Dislocations of the Hip. Late Results in 76 Cases.** [In English]

B. Paus. *Acta Orthopaedica Scandinavica* [*Acta orthopaed. scand.*] **21**, 99–112, 1951. 6 figs., 38 refs.

At a surgical clinic at Ullevål, Oslo, 60 patients with traumatic non-central dislocations of the hip were examined 3 to 28 years (average 15) after injury. The dislocations had been reduced without difficulty by manipulation in the flexed position. After-treatment was rest in bed for a few days up to 2 or 3 weeks and then unrestricted weight-bearing. Of the 60 patients, 9% had subjective symptoms, 11% objective signs; radiological signs of diffuse calcification or arthritis were

present in 17 cases, the remaining 43 being practically normal. Age, sex, the type of dislocation, fracture of the acetabular edge, and length of time before reduction did not seem of prognostic significance. Mild osteoarthritis resulted in 6 cases, and more severe in 6 others. Necrosis of the femoral head occurred once. These figures compare favourably with published results in cases treated by prolonged non-weight-bearing. A group of 4 with traumatic central dislocation were followed up 6 to 27 years later. Treatment had been by traction. All had severe symptoms, marked signs, and radiological changes. *J. C. R. Hindenach*

BONE AND JOINT DISEASE

318. **Tuberculosis of the Spine. An Analysis of the Results of Conservative Treatment and of the Factors Influencing the Prognosis**
J. DOBSON. *Journal of Bone and Joint Surgery* [*J. Bone Jt Surg.*] **33B**, 517–531, Nov., 1951. 27 figs., 10 refs.

The author reviews 914 cases of tuberculosis of the spine admitted to Wrightington Hospital, Lancashire, between 1932 and 1948, compares the results of conservative treatment with those following spinal fusion, and discusses the factors influencing prognosis. The patients' ages ranged from 1 to 72 years, the incidence of the disease in relation to age and site agreeing with previous findings. Radiologically, the initial lesion appeared as an " epiphysial change " in 33% of cases, and as a central focus in the body of the vertebra in 11·6%, but in 52·8% the disease was too advanced to determine the starting point. There was a history of trauma in 14%. Diagnosis was confirmed bacteriologically in 195 cases, the bacillus being of human type in 92·3%, and of bovine type in 7·7%.

Treatment in 860 cases was by complete immobilization for an average period of 39 months. Of this group the disease became quiescent in 61·3%, the patient died in 19·3%, and the re-admission rate was 22·3%. In children the tendency of the disease to spread in spite of efficient immobilization was notable, spread occurring in 35% of children under 10. Spontaneous bony fusion of the vertebral bodies affected occurred in 184 cases (27%), but among these also re-activation or spread took place. Of the 54 cases in which spinal fusion was performed, the disease was arrested in 74·1%, in 9·3% the patient died, and the re-admission rate was 33·3%. The opinion is expressed that the results of surgical fusion are not superior to those of conservative methods.

Of the factors adversely affecting the prognosis, other foci of active tuberculosis were present in 53% of patients over 20, with an accompanying death rate (25·5%) which was more than double that in uncomplicated cases; the presence of abscesses or secondarily infected sinuses also increased the mortality, while paraplegia, the most serious complication of all, was found in 18·1% of the total number, with a death rate of 24·8%.

Of 672 patients discharged for not less than 3 years previously, 155 had died and 103 were untraced; of 390 survivors followed up, 86% were in full employment. It is pointed out that the first essential for satisfactory treatment—early diagnosis—was lacking in this series of cases, symptoms having been present for an average of 30 months in adults and 14 months in children before the diagnosis was made. *V. Reade*

319. **The Osseous Lesions of Tuberous Sclerosis**
J. F. HOLT and W. M. DICKERSON. *Radiology* [*Radiology*] **58**, 1–8, Jan., 1952. 6 figs., 12 refs.

A radiological survey, at the University of Michigan, of 43 cases of well-defined tuberose sclerosis revealed certain typical skeletal changes. In 17 of the cases radiographs of the skull showed scattered sclerotic plaques in the vault, and 20 of the 30 patients whose hands and feet were examined radiographically had localized cyst-like areas of bone destruction in the phalanges or wavy periosteal new bone formation along the shafts of the metatarsals and metacarpals, or both kinds of changes together.

These highly selective osseous lesions, for which there is no explanation, are so typical, and were so strikingly similar in the cases examined, that they may be considered as valuable aids in the diagnosis of tuberose sclerosis.
A. Orley

320. **Benign Chondroblastoma of Bone**
W. G. FRANCE. *British Journal of Surgery* [*Brit. J. Surg.*] **39**, 357–361, Jan., 1952. 10 figs., 7 refs.

321. **Osteomyelitis in Infants**
D. W. BLANCHE. *Journal of Bone and Joint Surgery* [*J. Bone Jt Surg.*] **34A**, 71–85, Jan., 1952. 4 figs., 13 refs.

The incidence and severity of acute haematogenous osteomyelitis have diminished strikingly in the last 15 years, except in children less than 1 year old. Consequently the disease in the infant is relatively more common and more important than in former years, and its diagnosis, clinical course, and treatment are here discussed with reference to a series of 35 cases seen at the Children's Hospital of Los Angeles during the 16-year period 1934–50.

Initially, the general signs and symptoms were often slight, consisting in a moderate rise in temperature, a raised leucocyte count, and an irritable child who cried when the affected part was moved. Often they were so trivial that the child was not brought to hospital for a week or more after the onset. The outstanding local signs were swelling and loss of function of the limb. In some cases there was flaccidity, especially in cases in which the proximal end of the humerus was affected, whereas in those in which the proximal end of the femur was affected there was often a painful flexion deformity of the hip-joint. In 13 cases a single bone was involved, the total number of foci being 50, 22 of which were in the femur, 7 in the humerus, and 5 in the tibia. All patients (17) treated since 1944 received penicillin, alone or in conjunction with other antibiotics. The incidence of complications such as sequestrum formation or involvement of a joint depended entirely on the time elapsing between onset and treatment. The hip-joint became involved in 11 out of 16 cases in which the epiphysis of the femoral head was affected, all being treated

by simple surgical drainage followed by traction and the application of a plaster cast, with penicillin in adequate doses. It is emphasized that drainage of the joint should be carried out without delay in such cases, as otherwise the epiphysis of the femoral head will be so damaged that the femur will be dislocated out of the joint. In those cases in which the proximal end of the humerus was involved there was some shortening, but good movement remained. In 3 cases in which the distal end of the radius was involved, the radial epiphysis was affected, causing progressive radial deviation of the hand.

[In the discussion which followed the presentation of this paper opinions were divided as to the best treatment of a localized abscess or pyogenic joint, some speakers advocating aspiration, whereas others thought there was a definite case for incision of the established abscess, especially in cases where toxaemia persisted in spite of immobilization and adequate antibiotic treatment; this divergence of views is also present in Britain. Early diagnosis and the use of the right antibiotic in sufficient quantities, with immobilization and traction in some cases, are of paramount importance.] *W. E. Tucker*

322. **The Penicillin Treatment of Acute Haematogenous Osteitis: a Review of Some Unsatisfactory Results**
W. M. DENNISON. *Glasgow Medical Journal* [*Glasg. med. J.*] **33**, 16–26, Jan., 1952. 7 figs., 8 refs.

Of 100 cases of acute haematogenous osteitis treated with penicillin in a surgical unit over a 5-year period, results were unsatisfactory in 15, although only one patient died. These 15 cases are analysed in an attempt to draw knowledge from experience. It is concluded that inadequate treatment, interruption of blood supply to bone, and penicillin-resistant infections were the three causes of unsatisfactory results in this series. Inadequate dosage and insufficient duration of penicillin therapy in the early days of this treatment accounted for 8 of the 15 failures, but stress is laid also on early evacuation of pus and primary suture to prevent sequestration. Weekly marrow puncture with instillation of penicillin in cases where the marrow fluid continues to grow organisms is advocated, and use of the newer antibiotics where problems of penicillin resistance occur is discussed.
M. Baber

323. **The Differentiation of Bony Metastases of Carcinoma of the Prostate from Osteitis Fibrosa.** (Le diagnostic des métastases osseuses du cancer de la prostate et de l'ostéite fibreuse)
J. A. LIÈVRE. *Presse Médicale* [*Pr. méd.*] **60**, 85–89, Jan. 23, 1952. 9 figs., 17 refs.

In recent years it has been suggested that cancer of the prostate may produce changes in bone other than secondary malignant deposits. It has not proved difficult to recognize such deposits. More difficulty is encountered in the exclusion of malignancy in cases of localized osteitis fibrosa. Paget's disease is much more frequent in occurrence than was originally thought; Schmorl gave a figure of 3% in all people over 40 years of age. (In this paper condensing osteitis of the hip and of the vertebral column are included in Paget's disease.) Attention to Paget's disease of the pelvis is often drawn by the common complication of osteo-arthritis of the hip. Here one can often notice the thickening of the ala of the ilium and the sensitivity of the bone to digital pressure. Suspicion of carcinomatous metastases may arise from the appearances in routine radiographs of the pelvis and vertebral bodies, or because of the appearance of unexplained pain in a known case; but it must be borne in mind that pain may precede radiological signs of secondary deposits.

The radiological signs of Paget's disease are patches of increased density above the hip, spreading out towards the sacro-iliac joint and the anterior margin of the ilium. Areas of trabeculation are apparent converging gradually on the somewhat more dense areas. The rounded opacities seen in the skull do not appear in the pelvis. Pelvic metastases from carcinoma of the prostate are characterized by the new bone formation provoked, and these islands of new bone, sometimes large but often small and innumerable, lie in an undisturbed trabecular matrix. The islands are usually widespread and there are areas of dense bone of varying size. The most common primary site is in the roof of the acetabulum. The sacrum and spine are often equally involved. There is a small area of rarefaction at the centre of these dense areas and this may be detected in good radiographs, but is usually obscured by the new bone formation which it excites. Occasional cases, however, appear in which rarefaction alone is noted.

The serum phosphatase levels in these conditions were also studied. That of alkaline phosphatase is a reflection of the activity of the phosphatase in the bone and is therefore present in active bony conditions. Acid phosphatase is a prostatic secretion and its blood level is raised in prostatic obstruction or widespread secondary prostatic deposits. The following facts emerged from this study: (1) A high acid-phosphatase level was not constant in carcinoma of the prostate, with or without widespread secondary deposits. (2) The serum acid-phosphatase activity was very variable in the same patient at different times, ranging from 8·8 to 50 units. The return of the acid phosphatase level to normal after oestrogenic treatment is well known. (3) It is essential also to estimate the serum alkaline-phosphatase level. This was also elevated in cases of cancer of the prostate, but not proportionately to that of acid phosphatase. It attained a figure equal to that seen in cases of Paget's disease (30 to 50 units or more). Occasionally the serum acid-phosphatase level was slightly raised in Paget's disease.

To summarize then, a rise in serum acid-phosphatase level alone is significant of carcinoma of the prostate, whereas a similar marked increase in that of alkaline phosphatase alone suggests Paget's disease. If the two figures are normal the examination is inconclusive, as normal levels may be found in either condition. If the two figures are moderately elevated with a preponderance of alkaline phosphatase, the diagnosis is no more definite, but continued observation may show a rise in the acid-phosphatase level characteristic of cancer of the prostate. *J. G. Bonnin*

324. **Ewing's Sarcoma**
L. J. McCormack, M. B. Dockerty, and R. K. Ghormley. *Cancer* [*Cancer*] **5**, 85–99, Jan., 1952. 13 figs., 24 refs.

325. **Arthrodesis of the Wrist. Preliminary Report of a New Method**
R. F. Robinson and D. O. Kayfetz. *Journal of Bone and Joint Surgery* [*J. Bone Jt Surg.*] **34A**, 64–70, Jan., 1952. 2 figs., 4 refs.

Most methods of arthrodesis of the wrist aim at eventual bony ankylosis by means of various types of onlay and inlay grafts. These are not uniformly satisfactory because, despite prolonged and absolute immobilization, the graft may not take.

The present authors describe a new method in which bony surfaces are brought together and fixed by a rigid screw. The operation is suitable for all cases of severe osteo-arthritis following injuries in the region of the wrist-joint, and is performed through a curved incision directed radially. The proximal row of carpal bones is removed, the articular surfaces of the radius, capitate, and hamate are pared off, and a small cup depression is made in the distal end of the radius to fit the head of the capitate. (In cases where the inferior radio-ulnar joint is involved in the arthritic process the incision is curved towards the ulna and the lower end of the ulna is removed.) The radius is fixed to the distal row of the carpus by a screw which passes from the outer side of the base of the styloid process, about 1·5 cm. from the joint, across to the body of the capitate without transgressing into the carpo-metacarpal joint. Small bone chips cut from the discarded proximal row of carpal bones are wedged in the crevices. The arm is placed in a padded plaster from the axilla to the base of the fingers for 4 weeks, after which it is cut down to the forearm and elbow movements are allowed. The plaster is removed 8 weeks after operation. The authors have performed this operation 12 times on 11 patients, and in all cases bony union has occurred within 8 weeks with excellent results.

[This operation is similar to Charnley's method of arthrodesis of the knee-joint, in which bony surfaces are pressed together. Brockman and Nissen have described a somewhat similar method in which the proximal row of the carpal bones and the end of the ulna are removed, and the distal end of the radius is bevelled into a point and forced between the distal row of carpal bones, which have been split transversely. This method requires long immobilization and is not considered to be as certain to produce an arthrodesis as the method described in the present article.] *W. E. Tucker*

326. **The Imbibition of Fluid as a Cause of Herniation of the Nucleus Pulposus**
J. Charnley. *Lancet* [*Lancet*] **1**, 124–127, Jan. 19, 1952. 6 figs., 1 ref.

The author does not consider that protrusion of the intervertebral disk is satisfactorily explained as due to external mechanical factors acting on a " degenerating " disk, and he adduces evidence which suggests that intrinsic causes in the disk may be more important than external factors. Acute lumbago usually starts without recognizable injury, often following exposure to cold after a latent period, while the pain is unlike that usually associated with an injury, which is maximal almost at once and is relieved by complete rest, whereas in acute lumbago the patient is often relieved somewhat if he is able to move a little. The acute stage lasts between 2 and 3 weeks, quite unlike an injury, and is often preceded by a prodromal phase lasting some 24 hours.

In experiments on the cadaver the author found that when a fresh specimen of lumbar spine was frozen and sawn in half longitudinally, one half being immersed in normal saline for 24 hours and the other merely allowed to thaw out, the central portions of the nuclei pulposi in the former half projected far more than those in the latter. Moreover, whereas the protrusions disappeared in the control specimen on exerting longitudinal traction, those in the specimen which had been immersed did not, showing that an increase in volume had taken place.

By some further experiments [the description of which is a little difficult to follow] he was able to prove that internal tension of some degree is generated in the nucleus pulposus when immersed in saline. He therefore advances the hypothesis that under certain conditions the intervertebral disk may acquire an abnormal amount of fluid and that the consequent increase in internal pressure constitutes the acute attack of lumbago. A spontaneous protrusion may then occur or a slight injury complete the bursting of the annulus fibrosus, with conversion of the clinical picture of lumbago into that of sciatica. He concludes that " if this hypothesis should prove correct it opens up the future possibility of prophylactic treatment of lumbago by medical means ". *Ronald Furlong*

327. **Fascial Arthroplasty of the Knee**
A. Miller and B. Friedman. *Journal of Bone and Joint Surgery* [*J. Bone Jt Surg.*] **34A**, 55–63, Jan., 1952. 5 figs., 7 refs.

The authors analyse 37 cases in which fascial arthroplasty of the knee has been performed during a 30-year period at the State University of Iowa Hospitals. The cases were divided into three groups: (1) atrophic arthritis; (2) infective arthritis; and (3) post-traumatic ankylosis. The result was considered " good " if there was freedom from pain with 45 degrees of movement and stability; and " fair " if there was 35 to 45 degrees of painless movement with a degree of stability which necessitated the use of a brace for prolonged walking or standing only.

In Group 1, of 20 cases, there were 6 good results, 4 fair results, and 10 failures—mainly due to stiffness. In Group 2, of 14 cases, there were 5 good and 4 fair results, and 5 failures. The type of infection appeared to matter little, but the degree of periarticular fibrosis was of significance. There were only 2 cases in Group 3, and both were failures on account of post-operative infection. Better results were obtained in cases where ankylosis had occurred previously in a good position.

The operative exposure preferred was the medial parapatellar incision, displacing the patella laterally, and the

authors emphasize the need for removing enough bone to make a good joint space. They stress that extensive stripping of the lateral structures should be avoided, and prefer the Campbell technique of modelling a large convex femoral condyle to the Putti or Albee procedure.

At re-exploration in 10 cases there was no evidence of fascia lata at the points of weight-bearing, the coverings of the new joint surfaces being the result of organization of the haematoma over the raw bone surfaces. Post-operative manipulation was not effective in providing a permanent increase in the range of movement.

[The results in this series of cases, with a post-operative period of 3 to 15 years, are instructive, and are consistent with those reported by other authors.] *W. A. Law*

PLASTIC SURGERY

328. **Corticotrophin (ACTH) in Treatment of Keloids**
H. CONWAY and R. B. STARK. *Archives of Surgery* [*Arch. Surg., Chicago*] **64**, 47–50, Jan., 1952. 4 figs., 14 refs.

A form of treatment which may prove to be superior to *x*-ray therapy for the alleviation of the symptoms of keloid is briefly described. In the first of two methods tried, surgical excision was followed by parenteral administration of corticotrophin (in the first case, in a child of 2 years, 40 mg. daily for 22 days; and in the second case 100 mg. daily for 10 days). Both these were instances of true spreading keloid, yet no recurrence has been seen over 6 months.

In the second series, in which surgery was omitted, 4 patients were treated by intrakeloid injection of corticotrophin copiously diluted with hyaluronidase to facilitate permeation. Each injection of 1 ml. contained 12·5 to 25 mg. of the hormone and 125 to 250 turbidity-reducing units of hyaluronidase, and after 5 such weekly injections the patient was given a month's rest before the second course was started. In only one case was the appearance of the keloid affected by blanching and softening, but in all 4 cases the itching and pain have disappeared, apparently permanently. The effect was achieved after the first or second injection; the value of the prolonged course is regarded as uncertain, as is also its advantage over simple parenteral administration.

R. P. G. Sandon

329. **The Surgical Treatment of Post-radiation Recurrent Basal-cell Carcinoma of the Face and Scalp**
R. CHAMPION and R. GIBB. *British Journal of Plastic Surgery* [*Brit. J. plast. Surg.*] **4**, 263–278, Jan., 1952. 7 figs.

Between 400 and 500 cases of basal-cell carcinoma of the skin are treated annually by radiotherapy at the Holt Radium Institute, Manchester. The results are satisfactory from a cosmetic, economic, and functional point of view, but in a certain number of cases there is recurrence in the irradiated area. Thus of 259 cases of basal-cell carcinoma of the face and scalp treated in 1938 primary recurrence was found in 21 (8%) at the fifth anniversary; and of 462 cases treated in 1947 recurrence was present in 28 (6%) at the third anniversary. There was only a slight variation in the recurrence rates as between the different sites.

The causes of failure of radiotherapy in primary cases of basal-cell carcinoma appear to be: (1) " geographical miss ", commonly due to slipping of a radium mould or of an *x*-ray applicator; (2) inadequate dosage; (3) adenoides cysticum type of lesion; and (4) supralethal doses.

For post-irradiation recurrence the treatment becomes a surgical problem. During 4 years 45 cases of post-irradiation recurrent basal-cell carcinoma were treated. In lesions of the scalp, forehead, and temple, where there is likelihood of infiltration of the deeper layers, including bone, the whole thickness of the skull is excised. A case is described and illustrated. Pre-auricular and post-auricular areas are excised widely, including, if necessary, vital structures such as the facial nerve. When the deeper structure of an eyelid is involved the full thickness of the eyelid must be removed.

A typical basal-cell carcinoma of the nose is described to emphasize the importance of radical removal. Photographs are reproduced to show the result of inadequate excision with a very complicated repair.

The authors conclude that radiotherapy for early basal-cell carcinoma of the face and scalp gives freedom from recurrence in over 90% of cases. When post-irradiation recurrence does occur it should be treated by bold and radical excision. *F. T. Moore*

330. **Experience in Burying Live Scars**
D. A. C. REID. *British Journal of Plastic Surgery* [*Brit. J. plast. Surg.*] **4**, 235–243, Jan., 1952. 9 figs., 22 refs.

The idea of burying live scars *in toto* as a plastic procedure was first suggested by Sir Harold Gillies, who applied to it the descriptive term " zoo-dermatophy ".

In the present investigation, at Rooksdown House, Basingstoke, the majority of scars dealt with occurred on the face and neck. The scar was treated by incising its margins, undermining the adjacent skin edges, and suturing these over the scar, which was thus completely buried. The contour-filling effect in the case of markedly depressed scars was excellent. The procedure was extended to include the burying of strips of skin along the lip edges in cases where there was inadequate prominence of the red margin. In one other case a large piece of free-skin graft was buried, in this instance by means of a double-pedicle flap.

" Zoo-dermatophy " was performed on 20 patients. Of the 14 cases in which scars were buried, in 11 the late results have shown that only too frequently the buried scar gives rise to trouble, forming itself into a cylinder or sac. Of the 8 cases in which attempts were made to improve the red margin of the lip only about one-third were assessed as satisfactory; and of the 2 cases in which free-skin grafts were buried a satisfactory result was obtained in one.

The author mentions that Poulard treats depressed scars by using a similar technique, but in addition removes the epithelial surface of the scar.

F. T. Moore

Neurology and Neurosurgery

331. **Levels of Integration of Respiratory Patterns**
H. E. HOFF and C. G. BRECKENRIDGE. *Journal of Neurophysiology* [*J. Neurophysiol.*] **15**, 47–56, Jan., 1952. 6 figs., 9 refs.

Three types of normal breathing are distinguished by the authors, the first being eupnoea, in which the rate, depth, and expiratory base line are approximately constant, although changing in response to metabolic demands. With a large increase in metabolism especially with a rise in temperature, panting appears as a second type of breathing. This is distinguished by its smaller amplitude and greatly increased rate. The third type is sighing respiration (Christie), in which gasps of maximal respiratory amplitude are made at a slow rate (Barcroft's " all-or-nothing " respiration or Lumsden's " gasping " respiration).

An animal with the brain sectioned in the medulla is capable of eupnoea or of sighing respiration; the latter type is especially marked when the animal is moribund. If the section is above the vagal inflow then vagotomy causes a slight deepening, but also acceleration, of breathing of eupnoeic type. In a mid- or high-pontine preparation there is normally a regular combination of eupnoeic and sighing respiration, which is also seen in a mid-collicular transection. In these animals vagal section causes inhibition of eupnoeic breathing. It results in apneustic breath-holding in mid-pontine sections, but in low-pontine or mid-brain sections there is slow deep breathing due to dominance of the sighing respiration mechanism.

The authors conclude that the eupnoeic and sighing types of respiration are quite distinct. The sighing respiration depends on a mechanism situated at a supramedullary level which is normally inhibited by suppressor regions higher in the brain, and by afferent stimuli coming up the vagus. Vagotomy then results in slow breathing due to the release of the sigh mechanism and its consequent inhibition of eupnoea. *Donald McDonald*

332. **Influence of Morphine on Respiratory Patterns**
C. G. BRECKENRIDGE and H. E. HOFF. *Journal of Neurophysiology* [*J. Neurophysiol.*] **15**, 57–74, Jan., 1952. 17 figs., 15 refs.

Continuing their study of respiration described in Abstract 331 the authors have used morphine in intact unanaesthetized dogs as well as in dogs with transection of the brain-stem. In the intact animal morphine (in doses up to 100 mg. per kg. body weight) produces changes similar to those of decerebration. After the initial stimulant action, there is established a rhythmic pattern of deep sighing respiration, an increase of the inhibition of eupnoea following sighs, and a reduction of eupnoeic amplitude. Panting may also occur. This supports the contention that sighing respiration is organized by the pontine centres which are normally suppressed by the activity of higher centres; morphine depresses the activity of the higher centres and " releases " sighing respiration.

In some cases the administration of morphine during apnoea caused the resumption of breathing, which suggests that the drug is not purely depressant in action. On the other hand, it is postulated that such apparent stimulation is, in fact, a " release " phenomenon, and is due to the suppression of neuronal systems in the reticular formation that are inhibiting breathing. Little evidence is put forward on panting but it appears to depend on the integrity of the brain-stem at least as high as the hypothalamus. *Donald McDonald*

333. **The Effect of Mephenesin in Spastic Paralysis**
D. R. LAURENCE. *Lancet* [*Lancet*] **1**, 178–180, Jan. 26, 1952. 2 figs., 21 refs.

Oral mephenesin (" myanesin ") given to the limit of tolerance was of benefit in only 2 out of 27 collected cases showing spastic paralysis. It altered the neurological signs in many cases without improving the patient's performance. One of the patients benefited suffered from spastic paraplegia, but had good voluntary power underlying his spasticity; while the other, with spinal compression from Paget's disease, had considerable relief from his painful flexor spasms, though 2 other patients with this trouble were not helped.

Intravenous mephenesin produced good muscular relaxation of short duration in each of 10 cases without diminishing voluntary power, but this method of administration is considered useless for clinical therapy, because of its brevity of action and its side-effects.

The rationale for the trial of mephenesin in conditions showing spasticity, its mode of action, and its toxic effects are discussed.

Five of the patients who failed to benefit from mephenesin alone also derived no benefit from supplementary treatment with oral neostigmine. *J. David DeJong*

334. **The Diagnosis of Cerebral Tumours by the Combination of Electroencephalography and Angiography.** (Diagnostic des gliomes par l'EEG et l'angiographie conjuguées)
M. DAVID, H. FISCHGOLD, G. C. LAIRY-BOUNES, and J. TALAIRACH. *Presse Médicale* [*Pr. méd.*] **60**, 81–84, Jan. 23, 1952. 9 figs., 9 refs.

The authors have endeavoured to establish diagnostic criteria of comparable accuracy to, but without the dangers of, ventriculography. The electroencephalogram (EEG) is recorded as the first step in locating the tumour. The presence of a glioma gives no characteristic EEG rhythm. In the stage where the tumour is irritating or destroying cerebral tissues, spikes or slow waves may be observed; later, absence of electrical activity is more typical of the centre of the tumour, and

the record may represent its most superficial region; spike activity then occurs at the margins. A polymorphic delta rhythm is used by the authors as the truest sign of the surface of the tumour. Further indirect signs in the EEG are monomorphic rhythms. These are relatively simple sinusoidal waves usually noted in the fronto-temporal region and are found with deep or posterior tumours, but are of little locating value. Another indirect sign in tumour cases is the observation that opening the eyes fails to abolish the α-rhythm as it does in normal people. This is frequently seen in invasive malignant gliomata and is emphasized by high intracranial pressure.

Angiography follows the EEG examination; films of arterial filling and 3 phlebograms (at the 4th, 5th, and 6th seconds) are taken in both lateral and anterior-posterior views. The course of the major arteries and the presence of excessive vascularization or the absence of vessels are noted. Indirect signs may be seen in distortions of the branches of the anterior cerebral artery, in the development of unusual collateral channels and of unusual venous drainage (which has been observed on occasion to be through contralateral veins). The weaknesses of the two methods have been shown to be difficulty in diagnosing parieto-rolandic gliomata by EEG, and occipital or high parietal gliomata by angiography. Where the indirect changes in the EEG suggest a deep-seated tumour then ventriculography is the method of choice. *Donald McDonald*

335. **Functional Restoration of the Paralyzed Diaphragm following the Cross-union of the Vagus and the Phrenic Nerve**

J. O. Brown and V. P. Satinsky. *American Journal of the Medical Sciences* [*Amer. J. med. Sci.*] **222**, 613–622, Dec., 1951. 6 figs., 9 refs.

Experiments were performed at the Jefferson Medical College, Philadelphia, to explore the possibility of re-innervating the diaphragm in cases of poliomyelitis in which the motor neurones of the phrenic nerve have been destroyed. The left phrenic nerve in 6 dogs was divided intrathoracically, and with it the vagus below the recurrent laryngeal nerve. The proximal end of the vagus was then sutured to the distal end of the phrenic, precautions being taken to ensure that the proximal phrenic segment could not regenerate into the union. The left half of the diaphragm was shown to be paralysed on *x*-ray screening. After a variable period of time, movement returned to the diaphragm, although it was never so great as before. Section of the right phrenic nerve was then carried out and a similar cross-union with the vagus performed. The left side of the diaphragm continued to contract, thus showing that the re-innervation was not from the contralateral phrenic.

The movements that had returned to the left side of the diaphragm were sufficient to keep the animal in good condition after this second operation, whereas control dogs in which both phrenic nerves had been cut never survived more than 16 hours. In time both sides of the diaphragm were functioning synchronously once more. Histological studies showed that the regeneration was, in fact, a genuine growth of vagus fibres into the stump of the phrenic. The rhythmical movements that resulted after the cross-union were presumably due to a natural rhythmical discharge of vagal neurones. The authors emphasize the potential value of these findings in the treatment of human cases of poliomyelitis.

Donald McDonald

336. **The Pattern of Motor Innervation in Mammalian Striated Muscle**

W. Feindel, J. R. Hinshaw, and G. Weddell. *Journal of Anatomy* [*J. Anat., Lond.*] **86**, 35–48, Jan., 1952. 21 figs., 32 refs.

The neural pattern of certain muscles of the leg (lumbricals, extensor digitorum longus, and tibialis anterior) and neck (sterno-mastoid and crico-thyroid) and that of the extrinsic ocular muscle of 18 adult rabbits and 2 macaque monkeys was investigated by means of the intravital methylene blue method of Feindel *et al.* (*Brain*, 1947, **70**, 495). With the exception of the latter group the general pattern was found to be as follows.

The intramuscular terminal bundles derived from the parent nerve form an intricate plexiform network, the branches of which diverge so that axons derived from one bundle may supply motor endings in different parts of the muscle; similarly, axons derived from a given bundle may pass to different zones of the muscle, so that within a given zone adjacent end-plates may be supplied by different axons; further, as a result of axon bifurcation, a given axon may supply end-plates in different zones of the muscle. No evidence was found of muscle fibres being supplied by more than one axon. The motor end-plates are arranged in groups separated by plate-free zones.

In the extrinsic ocular muscles the plexiform intermingling of terminal bundles is much less marked, and, in contrast to the condition in the limb muscles, isolated terminal fibres and end-plates, as well as axons supplying more than one end-plate to the same muscle fibre, are common.

These findings serve to explain the results achieved by electrical stimulation at axonal level, as well as the difficulty encountered in recording discrete action potentials from a single motor unit.

A. S. Breathnach

337. **The Effect of Stimulation of the Lower Intrathoracic Portion of the Vagus Nerve on the Cardiovascular System of Dogs**

S. T. Chester, H. C. Naffziger, C. Fisher, S. Rothenberg, and H. J. McCorkle. *Surgery, Gynecology and Obstetrics* [*Surg. Gynec. Obstet.*] **94**, 23–30, Jan., 1952. 10 figs., 4 refs.

This investigation, carried out at the University of California School of Medicine, was prompted by reports of death which might have been due to manipulation of the vagi during the operation of vagotomy for peptic ulcer. The vagi were exposed in dogs between the hilum of the lung and the diaphragm and four types of stimulus applied: (1) traction (14 dogs); (2) electrical stimulation by means of an induction coil (8 dogs); (3) cutting

(5 dogs); and (4) clamping with a haemostat (5 dogs). The effects of these procedures on the blood pressure and pulse rate, recorded directly from the femoral artery, and on the electrocardiogram were observed. The authors state that "the only constant response of the cardiovascular system to stimulation of the lower intrathoracic vagi was a transient alteration of blood pressure following traction or electrical stimulation". (The blood pressure usually rose.) The effects of certain drugs in modifying the response were then investigated. Atropine given intravenously (3 mg.) did not alter the blood-pressure response, though it did prevent the bradycardia which follows stimulation of the cervical vagus. However, "dibenamine" (20 mg. per kg. body weight intravenously) abolished the response. Procaine infiltrated into the thoracic or cervical part of the nerve proximal to the site of stimulation abolished or greatly decreased the response to electrical stimulation but not to traction; the latter was abolished by section of the nerve in the neck. In 3 dogs the vagi were exposed in the neck as well as in the thorax and the effects of the same stimuli noted at this level. The response to traction was the same at both levels, and the nerve in the neck was seen to move several centimetres when pulled on in the chest. Electrical stimulation in the neck caused a fall in blood pressure.

These findings indicate that stimulation of the lower thoracic vagi tends to produce a temporary rise in blood pressure by a reflex arc having its afferent limb in the vagus (the reflex abolished by proximal interruption of the nerve and not by atropine or distal nerve block) and its efferent limb in the sympathetic pathways (interruption of the arc by dibenamine and not by atropine). The fact that proximal procaine block did not prevent initiation of the reflex by traction, whereas proximal section of the nerve did so, is interpreted as indicating that the stimulus due to traction is initiated in the nerve at the point where it is fixed to the cranial foramen.

These experiments in the dog suggest that the cardiovascular responses following stimulation of the lower thoracic vagus are not serious and that they may be prevented by proximal procaine block combined with gentle handling of the nerve. In one dog curare was found to be without effect on the reflex.

C. J. Longland

338. **Anatomic Studies on the Sympathetic Nervous System**

R. M. Brooker. *Archives of Surgery* [*Arch. Surg., Chicago*] **63**, 799–806, Dec., 1951. 7 figs., 11 refs.

Bilateral dissection of the thoracic and abdominal sympathetic nerve chains in 41 adult human cadavers gave the following findings: (1) Sizable branches may pass from the upper thoracic ganglia, as high as the first, accompanying the intercostal arteries to the aorta and along the azygos and hemi-azygos veins; in some cases they may connect with fibres lower down. (2) The 12th thoracic ganglion is often absent (in 58% of cases on the right and in 46% on the left), or may be buried in the crus of the diaphragm, or fused with the 11th thoracic or 1st lumbar ganglion. (3) In no case did the splanchnic nerves and sympathetic chain pass through the aortic opening, but traversed the crus of the diaphragm; the intracrural part of the chain may be so thin as to be mistaken for the lesser splanchnic. The arrangement of the splanchnic nerves varied as follows: (1) the greater splanchnic nerve arose from ganglia T3 to T9 and fused with the lesser splanchnic from ganglia T10 and T11 in 40% of cases; (2) the greater splanchnic arose from T3 to T9 with the lesser and lowest splanchnics arising separately from ganglia T10 or T11 and T11 or T12 respectively (in 22% on the right and 39% on the left); (3) the greater splanchnic arose as in (2), with fusion of the lesser and lowest splanchnics (27% right, 10% left). The lesser and lowest splanchnics end in the aortic and renal plexuses, and in 4 cases the latter was found to terminate in the superior mesenteric plexus.

A. S. Breathnach

339. **Results of Treatment of Erb's Progressive Muscular Dystrophy with Tocopheryl Phosphate and Inositol.** (Therapeutische Erfahrungen bei der Behandlung der Erbschen Dystrophia musculorum progressiva mit Tocopherylphosphat und Inosit)

R. Beckmann. *Deutsche Zeitschrift für Nervenheilkunde* [*Dtsch. Z. Nervenheilk.*] **167**, 16–30, 1951. 3 figs., bibliography.

This article discusses the finding that the blood level of α-tocopherol in patients with progressive muscular dystrophy is, on average, lower than that of a comparable series of normal subjects; the treatment of these cases with α-tocopherol is described. Since inositol seems to be important in the metabolism of tocopherol it was given also. Tocopherol was given in doses of 50 mg. twice a day by intramuscular injection, or of 300 mg. a day by mouth. Inositol was given in doses of 2 to 5 g. a day.

In the treated cases the blood α-tocopherol level rose to normal, though there was no effect on the creatinuria. The improvement in the treated cases leads the author to suggest further trial with this form of treatment.

G. S. Crockett

340. **The Morbid Physiology of Myotonia Congenita (Thomsen's Disease).** (Zur Frage der Pathophysiologie der Myotonia Congenita (Thomsen)

N. Zec, E. Rajner, and P. Stern. *Monatsschrift für Psychiatrie und Neurologie* [*Mschr. Psychiat. Neurol.*] **123**, 23–24, Jan., 1952. 1 fig., 32 refs.

Recent advances in the knowledge of muscle physiology are outlined, and special reference is made to the work of Stern, who has shown that in myasthenia gravis there exists an increased permeability of the muscle cell membrane (*Acta med. jugoslav.*, 1948, **2**, 1). Since the clinical picture of myotonia congenita and its response to therapy are directly opposed to those of myasthenia gravis, the authors suggest that permeability may be decreased in the former condition. As there is a hypersensitivity to acetylcholine in myotonia it was considered that curare should be useful in its treatment, and 7 members of a family suffering from the disease were subjected to treatment with tubocurarine chloride. The patients consisted of 5 siblings aged 14, 11, 9, 6, and 3½

respectively, their uncle (aged 42), and his son (aged 9). The last 2 suffered from the classical form of Thomsen's disease, exhibiting myotonic spasms on vigorous movement, passing off with repetition. The other patients suffered from a type of myotonia (" myotonia paradoxa ") which is aggravated by further movement and which tends to spread to other muscle groups, necessitating a period of rest before the spasm passed off.

Tubocurarine was given intravenously, in one-quarter or one-third the dose used in anaesthesia, in 10 ml. of 25% glucose solution. There was immediate relief of the myotonus, most marked in the distal muscles and persisting in one case for 12 days. After a further injection, improvement could be maintained with quinine (0·5 g. daily), which in one of the cases had previously been without effect. It is suggested that in this group of diseases the lesion is not one of muscle or of the end-plate, but an affection of higher neurones involving the trophic fibres of the autonomic system. These, together with the motor nerves, normally control the end-plate, which should be regarded as a peripheral ganglion cell innervating the muscle fibre. *R. Emery*

See also Radiology, Abstract 79.

BRAIN

341. **Fat Embolism. A Problem in the Differential Diagnosis of Craniocerebral Trauma**
R. C. SCHNEIDER. *Journal of Neurosurgery* [*J. Neurosurg.*] **9**, 1–14, Jan., 1952. 3 figs., 42 refs.

Although fat embolism is a frequent result of fractures of long bones, and such embolism often involves the central nervous system, it is a topic that has not been widely discussed by neurosurgeons. This report, from University Hospital, Ann Arbor, Michigan, concerns 3 cases with proven fat embolism and contains a brief account of a suspected fourth case. Only one patient died, and in that case fat was not demonstrated in the urine, although this is the most reliable single sign. The most difficult differential diagnosis to make is between an intracranial haematoma and fat embolism. The characteristic " lucid interval " of extradural haematoma can be closely mimicked by the usual symptom-free interval of fat embolism. On this differentiation rests the decision whether or not to make an intracranial exploration, and the author concludes that in cases of doubt this should be done, as the two conditions may exist together. Warthin's criteria are examined in detail, and amplified in some particulars. The diagnosis of systemic fat embolism is established by the presence of fat in urine, sputum, retina, or possibly venous blood. Cranial involvement must be diagnosed by neurological examination, but a rise in temperature without evidence of pneumonia suggests embolism of the brain. An increase in pulse rate also distinguishes embolism from the bradycardia of raised intracranial pressure.

From his experience the author suggests that the prognosis of fat embolism may not be so grave as has been stated in the past. *Donald McDonald*

342. **Focal Vegetative Syndrome after Frontal-lobe Trauma.** (Ogniskowy zespół wegetatywny po urazie płata czołowego)
W. STEIN. *Neurologia, Neurochirurgia i Psichiatria Polska* [*Neurol. Neurochir. Psichiat. pol.*] **1**, 177–195, 1951. 7 refs.

It is pointed out that although the close connexion between the vegetative nervous system and the frontal lobe was demonstrated during the last quarter of the 19th century, the location of a vegetative centre is not yet clearly established. In frontal-lobe tumours the vegetative symptoms are sporadic only, while after frontal leucotomy they are transitory. The author here describes the case of a man of 21 observed at Lodz, Poland, in whom localized neurovascular symptoms had developed soon after an accident at the age of 4 which left a scar on his left forehead, and had persisted. Particulars of the immediate post-traumatic symptoms were not known, but shortly after the accident the skin over the right side of his face and neck and his right shoulder and arm started perspiring freely, especially during activity, emotion, and meals. His right hand was cold and cyanotic, with some atrophic changes of nails and skin.

These symptoms became worse after an attack of loss of consciousness lasting for several hours 3 years before admission to hospital. During sleep the perspiration was negligible. *X* rays of the skull showed thickening of the bony structure under the scar, and an encephalogram revealed some brain atrophy in the right frontal lobe. An electroencephalogram showed irregularity of the alpha rhythm in this same zone. The skin temperature was lower on the right side of the body, especially on the dorsum of the right hand, the affected parts were permanently flushed, and there was increased secretion of the right parotid gland. There was a very slight right paresis without any sensory changes.

The conclusion is drawn that these mixed symptoms were due to damage in the cortical centres of the frontal lobe and their afferent paths, resulting in increased activity of the subcortical vegetative centres.
W. Szaynok

343. **" T-tomy ", a New Technique in Extrapyramidal Surgery**
H. TAKEBAYASHI. *Medical Journal of Osaka University* [*Med. J. Osaka Univ.*] **2**, 1–27, Oct., 1951. 35 figs., 43 refs.

" T-tomy " [a term to which objection will be taken by many] is the name given to an operation of section between the white and grey matter of the frontal region which has been performed on patients with cerebral retardation from such causes as Little's disease, athetosis, and paralysis agitans. It is claimed that the operation, when properly performed, is capable of permanently abolishing choreo-athetosis and other abnormal involuntary movements. Subcortical division of areas 6, 4, 8, and 9 causes extensive fibre degeneration within both limbs of the internal capsule comparable to total division of the capsule. The author claims to have had experience of frontal subcorticotomy (T-tomy) in about

700 cases, and considers it to be indicated in cases of involuntary movement. The operation is performed through a burr opening and consists in adding a subcortical undercut to a limited type of the more usual lobotomy.

[The English translation is by no means perfect and detail is somewhat obscure in parts of the article. The extensive experience which the author claims is astonishing and the results claimed perhaps equally so.]

Lambert Rogers

344. **Some Peculiarities in the Regulation of Intracranial Blood Circulation.** (О некоторых особенностях регуляции внутричерепного кровообращения)
A. A. KEDROV and A. I. NAUMENKO. *Физиологический Журнал СССР* [*Fiziol. Z.*] **37**, 431–438, No. 4, 1951. 5 figs., 14 refs.

For the study by electroplethysmography of the extracranial and intracranial circulation in animals the authors describe an apparatus whereby either can be measured by recording the oscillations of current between four electrodes placed (for extracranial readings) in two pairs in the substance of the frontal and occipital muscles of the scalp on either side; or (for intracranial readings) on the outer and inner surfaces of the dura mater through trephine holes in the temporal regions of both sides. Details of the operative procedures are given.

A good record of the oscillations was obtained and the effect on these waves of stimulation of the central (that is, proximal) ends of the exposed and severed sympathetic and vagus nerves was studied. It was found that stimulation of the central end of the cervical sympathetic nerve caused a constriction of the extracranial (and to a lesser extent of the intracranial) vessels, whereas similar treatment of the vagus caused dilatation. Asphyxia produced a diminution in the tone of both intracranial and extracranial vessels, especially the former. Hence it is concluded that the chief factor in altering the tone of the intracranial circulation is the carbon dioxide content of the blood, and that vasomotor factors play little part.

Ligation of one common carotid artery had little effect on the intracranial circulation owing to the good anastomosis through the circle of Willis, but ligation of both arteries caused a rapid fall. Such reduction as followed unilateral ligation was equal on the two sides of the brain.

L. Firman-Edwards

345. **Cerebral Revascularisation. A Critical Evaluation of 14 Operated Cases.** [In English]
I. SELLEY, G. PETTERSSON, H. LARSSON, E. REGNÉR, T. SVENSON FREY, and J. LEHMANN. *Acta Chirurgica Scandinavica* [*Acta chir. scand.*] **102**, 342–363, Jan. 26, 1952. 12 figs., 29 refs.

The authors have investigated the claim that revascularization of the brain can be brought about by establishing a cervical arterio-venous fistula. They determined the effects of such operations performed at the Children's Hospital, Gothenburg, Sweden, on 14 children aged from 8 months to 13 years with cerebral retardation from injury to the brain. A carotico-jugular fistula in the neck does not always remain patent, and even if the shunt is open the probability that arterial blood reaches the superior longitudinal sinus through the shunt is extremely small unless considerable disconnexion of not easily accessible venous drainage channels from the posterior fossa is brought about. In 3 of the children side-to-side anastomosis between the common carotid artery and the internal jugular vein was performed, while in the others an end-to-side junction between the external carotid artery and the jugular vein was the procedure adopted. Angiographic studies and oxygen analyses were carried out both before and after these operations.

The conclusion reached from a careful survey of the problems involved and an analysis of the results obtained in the children is that the operation cannot be considered to contribute to the improvement of the cerebral state in children with brain lesions.

[This careful investigation shows quite definitely the futility of performing these arterio-venous anastomoses in the hope of improving cerebral blood supply.]

Lambert Rogers

346. **Carcinoma of the Choroid Plexus.** (Il carcinoma dei plessi corioidei)
S. MASTRAGOSTINO. *Rivista di patologia nervosa e mentale* [*Riv. Patol. nerv. ment.*] **72**, 465–482, 1951. 12 figs., 31 refs.

The author describes 2 cases of carcinoma of the choroid plexus. The first was in a man of 42 with a 2-month history of headache, vomiting, and loss of weight, who died 2 days after a craniotomy which revealed a large neoplasm arising from the fourth ventricle and invading the right cerebellar hemisphere. Histological characteristics of the tumour caused the author to designate it as " infiltrating papilliferous carcinoma of the choroid plexus of the fourth ventricle with pseudo-alveolar appearances ". The second case was in a man of 55 who died 2 months after the onset of symptoms of intracranial tumour, and was found at necropsy to have a neoplasm of the left temporo-parietal region of intraventricular origin. The pathological diagnosis was " papillary carcinoma of the choroid plexus of the left lateral ventricle with parenchymatous spread ".

The author then reviews cases of carcinoma of the choroid plexus previously reported in the literature, comments on the difficulties involved in distinguishing choroid carcinoma and papilloma, and describes his own criteria for making this distinction. From the review he finds that the relative frequency of carcinoma to papilloma varies from 1 in 4 to 1 in 8 with various authors. The incidence is almost equal in the third and fourth ventricles, but rare in the lateral ventricles. The tumour has been described as occurring at any age from 20 months to 55 years; it is seen almost exclusively in males. It follows a steadily progressive course, terminating fatally in a few months, although Walker and Horrax reported a case in which the patient survived for almost 10 years after three operations. The present author's second case was remarkable in that it showed a metastasis in the lung.

J. B. Stanton

347. **A Pathological and Clinical Study of Meningioma.** (Beitrag zur Pathologie und Klinik der Meningeome)
G. PETERS. *Deutsche Zeitschrift für Nervenheilkunde* [*Dtsch. Z. Nervenheilk.*] **167**, 83–101, 1951. 6 figs., 10 refs.

At the Neuropsychiatric Clinic of Bonn University, 50 cases of meningioma were treated by operation in the course of 3 years, and these cases are surveyed with the object of determining the relation, if any, between the histological structure of the tumours and their site, age and sex incidence, and other features.

The author classifies meningiomata as: (1) cellular, including the psammomata; (2) fibrous; and (3) vascular. In the last two groups there is to be found a greater or less degree of hyaline and mucoid degeneration. Of 19 parasagittal tumours, 10 were vascular, 6 fibrous, and 3 cellular. Of 10 tumours arising on the convexities, 5 were vascular, 4 cellular, and one degenerated. Of 21 tumours growing on the base, 11 arose over the sphenoid bone, and of these 8 were of the cellular type. The total of cellular tumours arising from the base amounted to 12, compared with only 7 out of 29 found in the vault. No correlation could be established between the site or the histological type and the sex of the patient, or between site of origin and age. Of 13 tumours occurring in the 4th decade of life, 9 were cellular, whereas out of 20 occurring in the 5th decade only 4, and out of 15 occurring in the 6th decade only 6, were of this type. The average duration of symptoms was 3·5 years in cases of the cellular type, 2·1 in those of the vascular type, and 2·6 years in cases of fibrous tumour. However, owing to predilection of cellular tumours for sites at the base of the skull, the higher average duration of illness is probably due to earlier symptom production rather than slower progression. None of the patients showed signs of recurrence after an average post-operative period of 2 years and 5 months.

The author concludes that the clinical picture of meningioma is determined entirely by its site, and that the histological classification of meningiomata is of anatomical rather than clinical interest. *R. Emery*

348. **Treatment of Embolism and Thrombosis of the Cerebral Vessels**
R. LERICHE. *British Medical Journal* [*Brit. med. J.*] **1**, 231–235, Feb. 2, 1952.

The author describes his clinical experience of interruption of the cranial sympathetic supply in cerebrovascular disease. Starting from the premise that autonomic vasomotor disturbance " usually precedes, often causes, and practically always accompanies, a [cerebro-] vascular accident ", he carried out investigations which led him to believe that the cerebral blood vessels are influenced by extracranial sympathetic interruption. Two cases of cerebral disturbance following wounds of the lower neck are described in detail. Improvement in the first followed resection of a thrombosed segment of the common carotid artery, and in the second after repeated procaine block of the stellate ganglion on the side of the wound, even though the injury itself had produced a Horner's syndrome.

Presumptive evidence that cerebral disturbances are sometimes due to vasomotor phenomena is provided by the manifestations of hypertensive encephalopathy and the transient paresis which may precede a stroke. For these reasons stellate ganglion block or sympathectomy has been carried out in patients, with hemiplegia, post-operative cerebral embolism, and other cerebral disorders, the clinical improvement often observed being ascribed to these procedures; details of some of these cases are given. In the treatment of patients with long-standing hemiplegia repeated stellate ganglion blocks (12 to 36) are considered advisable; about one-third of over 100 patients treated experienced relief, feeling less stiff and improving in walking. The improvement may be permanent if the patient is determined to collaborate. Sympathectomy may possibly be advisable in those who respond to procaine block, particularly if cerebral episodes recur. The operation usually practised by the author is a section of the vertebral nerve roots at the upper pole of the stellate ganglion on both sides of the neck. This operation is always followed for a few days by intense headache. *C. J. Longland*

349. **Hemiplegia and Thrombosis of the Internal Carotid System**
A. R. ELVIDGE and A. WERNER. *Archives of Neurology and Psychiatry* [*Arch. Neurol. Psychiat., Chicago*] **66**, 752–782, Dec., 1951. 16 figs., 33 refs.

In describing 6 cases of thrombosis of the internal carotid and 4 of thrombosis of the middle cerebral arteries the authors' aim is to discuss whether it is justifiable to speak of a " syndrome of thrombosis of the internal carotid artery ", and at the same time to record the value of angiography in the study of cerebral thrombosis. The ages of the patients with carotid thrombosis ranged from 20 to 50 years, and in all cases the occlusion was on the left side.

Clinically, patients were divided into two categories: those with a history of recurrent transient paretic episodes of slight degree, and those in whom the severe hemiplegic syndrome had not been preceded by such disorders.

The symptoms and signs are described; these are shown to vary considerably. Motor disturbances are most prominent, and range from a slight drooping of one corner of the mouth to a complete hemiplegia. Sensory disturbances are less prominent. Various affections of the cranial nerves, including the optic nerve, are described in the literature.

Electroencephalography in 5 cases of carotid thrombosis constantly showed delta waves of varying amplitude localized to the fronto-temporal region of the left hemisphere. Pneumoencephalography revealed enlargement of the lateral ventricle on the side of the lesion in 4 cases. Angiography was also performed, with " thorotrast " as the contrast medium. The commonest site of the thrombosis was just distal to the bifurcation of the carotid artery. It is, however, emphasized that failure to visualize the vessel does not necessarily mean that it is thrombosed; the critical appearance is a conical narrowing of its lumen before the point at which filling ceases.

In the cases of thrombosis of the middle cerebral artery there was also hemiplegia of sudden onset. Pneumographic and electroencephalographic findings closely resembled those of internal carotid occlusion. Exact differentiation could be made only with angiography.

The aetiological factors of carotid occlusion are reviewed; these include embolus, thrombosis from ligation of the internal carotid artery, thrombosis due to arteriosclerosis, thrombo-angiitis obliterans, infections, syphilis, direct trauma, and external compression by a neoplasm.

Treatment was directed at increasing the collateral blood flow; and the authors [though they do not say what procedure they themselves adopted] mention periarterial sympathectomy combined with ligation of the common and external carotid arteries. [They do not commit themselves in any way on the value of anticoagulants.] They consider the prognosis to depend upon the aetiology. *Fergus R. Ferguson*

350. **Epilepsy and Lefthandedness.** (Epilepsie en linkshandigheid)
W. HORDIJK. *Nederlandsch Tijdschrift voor Geneeskunde* [*Ned. Tijdschr. Geneesk.*] **96**, 263–269, Feb. 2, 1952. 10 refs.

Among more than 4,000 school-children, 28 were found to be epileptics. In this group the author found that epilepsy was linked with left-handedness either of the child or of a member of his family 15 times more often than was to be expected on statistical grounds. This corresponds with previous findings reported in the literature, and the author believes that this apparent association may help as a guide towards diagnosis in cases of doubtful epilepsy. *L. Michaelis*

351. **Temporal Lobectomy in Psychomotor Epilepsy.** (Ensayos de lobectomía temporal en la epilepsia psicomotora)
M. H. LARRAMENDI and S. OBRADOR. *Revista Española de Oto-Neuro-Oftalmología y Neurocirugía* [*Rev. esp. Oto-neuro-oftal.*] **10**, 393–406, Nov.–Dec., 1951. 5 figs., 15 refs.

The authors present case reports of 7 patients suffering from psychomotor epilepsy; they were all adults between 22 and 38 years of age. As investigation by electroencephalography had indicated the presence of a focal lesion in one temporal lobe they were treated by surgical excision of the anterior part of the temporal lobe. This was carried out under local analgesia, and after exposure of the lobe preliminary electrical stimulation was performed. The only effect of such stimulation was an alteration of consciousness, shown by confusion and perseveration in responses to questions; one patient, however, also responded with organized visual hallucinations and recollections of childhood. In 4 cases the right temporal lobe was operated upon, and in 3 cases the left temporal lobe; the portion removed was from 3 to 5 cm. in its antero-posterior axis and extended to the inferior tip of the Sylvian fissure. Immediate post-operative treatment with phenobarbitone and hydantoin was given.

In no case were there psychic sequelae. In 2 cases it appeared that the epileptic focus had been removed in that the patients were cured of their epileptic attacks. The others were improved in varying degrees. The first 3 were the least successful, because in the authors' opinion they were not suitable for operation, probably having foci elsewhere. The location of EEG abnormalities arising in the temporal lobe is discussed; in the later cases it was found that pharyngeal and tympanic leads were indispensable. *Donald McDonald*

352. **Types of Glossopharyngeal Neuralgia.** (Formen der Glossopharyngeus-Neuralgie)
E. BUES. *Deutsche Zeitschrift für Nervenheilkunde* [*Dtsch. Z. Nervenheilk.*] **167**, 1–15, 1951. 26 refs.

Two forms of glossopharyngeal neuralgia are described, the first consisting of paroxysmal attacks and the second accompanied by long-lasting pain; 2 cases in each group are given in detail. Symptoms of this condition include pain and cramp in the throat, a bitter taste at the back of the tongue, earache, pain behind the eye, pain in the gum, and pain in the throat as far back as the larynx. The patient may have taste loss in the posterior third of the tongue, with loss of the pharyngeal reflex. Attacks may be brought on by eating spiced foods, or by pressure in the tonsillar area.

There seems to be a similarity between this condition and trigeminal neuralgia; in both the aetiology is obscure, and either may follow brain injury or local nerve damage. There are no definite suggestions as regards treatment: one patient recovered after stellate block, and another after air encephalography. *G. S. Crockett*

SPINAL CORD

353. **A Study of the Causes of Failure in the Herniated Intervertebral Disc Operation. An Analysis of Sixty-seven Reoperated Cases**
J. GREENWOOD, T. H. MCGUIRE, and F. KIMBELL. *Journal of Neurosurgery* [*J. Neurosurg.*] **9**, 15–20, Jan., 1952. 4 figs., 3 refs.

Of 632 patients operated upon at the Methodist Hospital, Houston, Texas, for herniated disk, 58 were reoperated upon, and in 9 additional cases reported the patient had already been operated upon elsewhere. However, when the 10 patients are excluded who were reoperated upon while still in hospital, and 16 who had a second herniation in a different place, the surgical failure rate is only 5%. The other pathological findings in addition to the presence of a new herniation were: recurrence of cartilage at the same site (17 cases), herniations that had been missed at the previous operation (4 cases); and dense adhesions around the nerve root with or without bony encroachment (24 cases).

From their experience the authors conclude that the operation for lumbar-disk herniation is an operation not primarily on the disk injury, but on the nerve root or roots involved. Re-operation is regarded as a worth-

while procedure if proper notice is taken of this fact. Particular attention was paid to making sure that the opening through which the nerve root must pass was at least 50% larger than the root itself, as blockage of the foramen by loose cartilage or bony malformation was a potent cause of failure.

Tables of detailed results are given; of 67 cases re-operated upon, 47 gave good or excellent results; only 3 patients were unimproved. *Donald McDonald*

354. **The End-results of Operative and Conservative Treatment in 128 Cases of Sciatica due to Prolapsed Intervertebral Disk.** (Endergebnisse der operativen und konservativen Behandlung der Ischialgien bei Bandscheibenprolaps. Bericht über 128 Fälle)
H. PENZHOLZ. *Nervenarzt* [*Nervenarzt*] **22**, 441–444, Dec. 20, 1951. 19 refs.

The author of this article from the Westend State Hospital, Berlin–Charlottenburg, does not regard mechanical irritation as the only important factor causing sciatic pain in cases of prolapse of an intervertebral disk, instancing the frequent persistence of the shadow of the prolapsed disk in myelograms after disappearance of the sciatic pain under conservative treatment. He stresses the importance in addition of increased sensitivity of the nerve roots, which may originate from the mechanical irritation of the prolapsed disk, but which may also be heightened by such factors as cold, infection, and emotional stress. The treatment of such cases may therefore consist in: (1) removal of the mechanical cause by operation, or (2) reduction of nerve sensitivity by combined presacral and prevertebral procaine infiltration.

The success of the operation depends largely upon the degree of degeneration of the prolapsed disk. In the author's present series of 75 cases, 58 prolapsed disks were removed. In 35 cases the disk was found to be completely extruded and the annulus fibrosus either partially or totally ruptured; in such circumstances the results were most gratifying, and after a period of 6 months to 3 years, 25 of the patients were found to be completely cured, 3 greatly improved, 5 with restricted working capacity, and only 2 unimproved. In 17 cases no prolapse was found, but in almost all cases great symptomatic improvement resulted from the exploratory operation, and in 3 cases a complete cure. The over-all results of operation were: successful or almost successful in 57%, improvement of working capacity in 33%, and unsuccessful in 10%.

On the other hand, non-operative treatment by combined presacral and prevertebral infiltration with procaine has often proved successful, even in the most severe cases of root compression. The probable explanation put forward is that by inhibition of impulses, especially those from the presacral sympathetic plexus, a vicious circle is broken, and that in many cases the prolapsed disk, which was being held in a vice-like grip between the vertebrae by spasm of the lumbar muscles, can slip back into place. Of 143 patients subjected to 387 injections in all, 47% showed either little or no improvement, 25% were definitely improved, and 28% completely relieved of their immediate pain. Re-examination after 6 months or more showed that the over-all figures for this method were: 32% cured or greatly improved, 5% with increased working capacity, and 63% unimproved and therefore operated upon later. It is pointed out that the author's series consisted largely of the most severe, chronic, and resistant cases, such as are sent for treatment at a neurosurgical clinic, and it is probable, therefore, that the majority of cases met with in general practice can be satisfactorily treated by conservative methods, although such treatment should not be prolonged if not giving good results. *D. P. McDonald*

355. **A Study of Late Results from Disk Operations. Present Employment and Residual Complaints**
A. L. EYRE-BROOK. *British Journal of Surgery* [*Brit. J. Surg.*] **39**, 289–296, Jan., 1952. 9 figs., 2 refs.

This paper is based upon a series of 117 patients who have undergone operation for displaced intervertebral disk and been followed up for 1 to 5 years. In 99 of these cases a disk protrusion was found at operation; in 11 of the remainder no abnormality was discovered at the time of exploration, and some other lesion was found in 7. The protrusion was lumbo-sacral in 73 cases, at the interval between the 4th and 5th lumbar vertebrae in 28, and at that between the 3rd and 4th lumbar vertebrae in 2; in 4 cases a double protrusion was revealed. The author considers that trauma is not an important factor in the aetiology of lumbar disk protrusion, and that radiological examination has little value in diagnosis except in excluding other forms of spinal disease.

At follow-up it was found that backache was absent in 47 and present but slight in 45, and there was disability in 24 cases. Sciatic pain was absent in 67, slight and occasional in 22, and persistent in 11 cases. The results were less satisfactory in the group in which there was a negative finding on exploration than in patients from whom a disk protrusion had been removed.
J. E. A. O'Connell

356. **Anterior Sacral Meningocele**
R. J. CALIHAN. *Radiology* [*Radiology*] **58**, 104–108, Jan., 1952. 4 figs., 8 refs.

The author reports 3 cases of anterior sacral meningocele, seen at the Strong Memorial Hospital, Rochester, N.Y. The cause is agenesis of part of the anterior portion of the sacrum with herniation of the meninges. Its presence cannot readily be recognized, as in the case of the posterior protrusion, and therefore *x*-ray confirmation is important, especially since the tumour felt per rectum may be mistaken for an abscess and aspiration may lead to meningitis. Symptoms, if any, are usually due to pressure—for example, headache associated with constipation and defaecation and disturbance of micturition.

Radiologically the diagnosis presents little difficulty as the defect is readily seen on routine antero-posterior films. A lateral view of the barium-filled rectum, cystography, and ureterography will show the extent of the displacement of the pelvic viscera. Myelograms and films taken with the patient in varying positions will outline the meningocele. *Sydney J. Hinds*

Psychiatry

357. **Correlation between Fluctuation of Free Anxiety and Quantity of Hippuric Acid Excretion**
H. PERSKY, S. R. GAMM, and R. R. GRINKER. *Psychosomatic Medicine* [*Psychosom. Med.*] **14**, 34–40, Jan.,–Feb., 1952. 20 refs.

The excretion of hippuric acid after the administration of sodium benzoate has been shown to be low in catatonic schizophrenia and high in states of anxiety. In order to explore the relationship of hippuric acid (H.A.) excretion to anxiety a test was applied to three groups of subjects: (1) normal subjects: hospital personnel and students; (2) patients with "free anxiety"; and (3) catatonic schizophrenics. An attempt was made to assess clinically the degree of anxiety and catatonia in these subjects according to arbitrary scales: 0 to +4 for anxiety, and 0 to −4 for catatonia. The H.A. test was performed by Quick's method.

The results were as follows: (1) In 15 normal subjects tested at intervals over a 2-year period no significant variation was seen in H.A. excretion. Of these subjects, 9 were undergoing psychoanalysis, and although some anxiety is not uncommon in the course of an analysis, the test results were not influenced. In tests made on 32 students immediately before an important examination H.A. excretion was found to be normal. The authors conclude that H.A. excretion is not altered by mild or moderate stresses acting for a short time. (2) The mean H.A. excretion of 14 patients with anxiety states was significantly higher than that of the control group. Wide fluctuations in anxiety and H.A. excretion were observed during the course of psychiatric treatment. The coefficient of correlation between H.A. excretion and anxiety score was highly significant. (3) Ten catatonic schizophrenics were examined in various phases of the disease. The level of H.A. excretion was significantly lower than in the controls. Repeated testing during psychiatric treatment showed that H.A. excretion returned to normal levels if the patient was benefited by treatment. The coefficient of correlation between H.A. excretion and catatonic score was highly significant.

Desmond O'Neill

358. **The Menopausal Syndrome: a Study of Case Histories**
J. C. DONOVAN. *American Journal of Obstetrics and Gynecology* [*Amer. J. Obstet. Gynec.*] **62**, 1281–1291, Dec., 1951. 11 refs.

This report is based on the case histories of 110 patients diagnosed by clinicians as suffering from symptoms attributable to the menopause, all such patients attending the gynaecological clinic of the University of Rochester School of Medicine over a period of 22 months being included in the series.

All the patients were interviewed by the author, who gave each patient enough time to describe her symptoms in her own words, and took care not to ask leading questions. In 63 cases the patient described none of the generally accepted symptoms of the menopause. All these patients had many symptoms which could not be explained on physical grounds and which varied from visit to visit, their history was usually lifelong, and they were highly suggestible, but these characteristics often took a long time to emerge. In 45 cases the patient described one or more typical menopausal symptoms, but was also found to have multiple complaints, and the relation between the menopause and the onset of symptoms was not clear. The clinical histories of these 45 patients were, in fact, of the same general type as those of the first 63. Only 2 of the 110 patients gave a history of menopausal symptoms without an unusual number of other symptoms as well; in each of these the menopause had carried a special emotional meaning for the patient. Every patient who was given several interviews and allowed to talk freely experienced improvement in symptoms. Considerable improvement also followed the injection of sterile saline.

In the author's opinion, it is difficult to separate the vasomotor symptoms of the menopause from symptoms of hypochondriacal origin. In the conventional anamnesis too much attention is paid to the former, and the other things of which the patient might complain if she were given time are ignored. Whether her presenting symptoms are hypochondriacal, emotional, or vasomotor in nature, the woman who seeks the advice of her doctor during the menopause does so because she is emotionally upset.

[This study illustrates very clearly two important facts: (1) a great deal of time and patience are needed to find out what is really wrong with a patient; and (2) the disturbances of the menopause have the pathogenetic pattern of a stress disorder.] *Desmond O'Neill*

359. **Psychological and Biological Considerations in Human Boredom.** (Von der menschlichen Langeweile. Psychologisch-biologische Betrachtung)
E. LEVINGER. *Schweizerische Medizinische Wochenschrift* [*Schweiz. med. Wschr.*] **81**, 113–115, Feb. 3, 1951. Bibliography.

In human existence there is only a continuous lifestream. There is no "now" in life, and Heraclitus's aphorism, "everything moves; nothing stands still", is still valid. Together with this flowing-on of life, objective time also flows along. The possibility exists that there may be disagreement between physical time and the subjective time-feeling. The basic disturbance is then in the vital sphere; a break occurs between the more vital and the more mental life, as a result of which there is no pleasure in mental activity. In the society of to-day, with its increasing industrialization and socialization, the individual feels that his personal achievements have lost

something of their full value, and his well-meaning endeavours, according to his own judgment, are regarded as decadent, so that his absolutism and idealism place him apart from practical life. Boredom then represents a spiritual–psychological borderline situation. In this negatively charged condition the individual becomes aware that it is impossible for him to persist in an unnatural inactivity. But in addition to this he also has the feeling that he participates in something positive, whereby he overcomes this depressing factor in his existence. The human being must keep his inadequacy and imperfection constantly in mind. It is necessary to keep in view the limited nature of the human pleasure principle. This may be a consolation for the individual who has this principle as the deepest foundation of his existence. *I. J. G. Prick* (*Excerpta Medica*)

360. **The Schizophrenias of Childhood**
A. M. Sackler, M. D. Sackler, R. R. Sackler, and Co Tui. *Journal of Clinical and Experimental Psychopathology* [*J. clin. Psychopath.*] **12**, 224–239, July–Sept., 1951. 1 fig., 41 refs.

A series of 8 cases of schizophrenia in childhood is reported. Half of the patients were physically immature for their age, and all were easily distractable and inattentive, with hyperactivity and bizarre behaviour. Electric convulsion therapy had previously been given in 5 cases, with temporary improvement in 4. All 8 patients were given histamine acid phosphate subcutaneously daily for 5 days of the week, beginning with 0·1 mg. and increasing by steps of 0·5 mg. until the diastolic blood pressure was reduced to zero, this dosage then being maintained. In 3 of the patients there was moderate or marked improvement. These children were all 9 years old, and their histamine tolerance was markedly lower than that of others. All the children showed a high tolerance to thyroid hormone. All 8 had shown signs of schizophrenia before the age of 4, and half of them before 3. Nearly all the mothers showed a compensated schizophrenia, and there was maternal thyroid abnormality in 6 cases which, it is suggested, may have had an effect on the child *in utero*. In support of this it is pointed out that childhood schizophrenia appears to occur mainly in males (the proportion being 5 to 3 in this series), and the male foetus would be expected to be more seriously affected by hormonal disequilibrium. This theory, and the results of histamine therapy, are examined as to their possible contribution to the knowledge of schizophrenia. *E. H. Johnson*

361. **Barbiturate Subnarcosis as a Method of Psychiatric Examination.** (La subnarcose barbiturique, méthode d'exploration du psychisme)
J. Bourdon. *Acta Neurologica et Psychiatrica Belgica* [*Acta neurol. psychiat. belg.*] **51**, 777–797, Dec., 1951. 33 refs.

The author presents a study of barbiturate subnarcosis as a method of psychiatric examination in 140 cases. The technique, major indications, and results are fully described and illustrated by numerous case histories. Thiopentone was used in 2·5% solution in doses up to 1·0 g. This barbiturate is regarded as safe because of its rapid absorption and excretion. The use of a high dilution increases the safety margin and enables progressive and easily terminable narcosis to be obtained. The " pre-soporific " state was induced in patients not manifesting any anxiety or reticence, whereas excitable, overanxious, and uncooperative patients were taken to the " post-soporific " level. Indications for deep narcosis were inability of the patient to reveal his difficulties in spite of good will, and marked resistiveness. The importance of accurate observation of the physical reactions during subnarcosis is stressed.

The major indications for the use of subnarcosis are listed as follows: (1) when rapid exploration of the patient's psycho-physical state is required as a time-saving measure; (2) to differentiate superficial from deep-seated psychic trauma; (3) to expose stories fabricated by the patient deliberately to hide true episodes; (4) in cases of total depression and inhibition accompanied by marked bradylogia, preventing any conversation; (5) when other psychotherapeutic measures have failed to throw any light on the origin of long-standing delusions; (6) in certain doubtful cases to re-direct diagnosis and prognosis; (7) to study the evolution of a case after treatment, or to assess the true emotional value of past psychic trauma; (8) to differentiate functional from organic psychoses; (9) to investigate simulation; and (10) to explore amnesic hysteria.

The main object of barbiturate subnarcosis is the collection of new psychiatric data. Good results in this respect were achieved in emotional and shy patients and in some cases of anxiety state, hysteria, and recent neurosis. New facts elicited by subnarcosis, though not remembered in the waking state, were found to be retained on follow-up narcoanalysis in most cases, thus making progressive analysis possible. New data were not usually obtained in cases of oligophrenia, chronic neurosis, acute anxiety state, or catatonic mutism, in the presence of deep-rooted unconscious conflicts, or from patients showing marked reticence. The immediate therapeutic results are attributed to the sedative and relaxing action of thiopentone, combined with the calming, encouraging words of the psychiatrist. Thus amelioration of symptoms, mostly temporary in nature, was noted in certain anxiety states and especially in war neuroses. No appreciable change occurred in the psychoses and in most neuroses. Unfortunately, a fruitful narcoanalysis does not guarantee improvement in the patient, while a poor result may well be followed by improvement.

The author concludes, however, that the mode of action of narcoanalysis is far from being understood. Secondary results of successful subnarcosis are: (1) a positive transference between patient and psychiatrist; and (2) more correct interpretation of conflicts, allowing better diagnosis and therapy. *J. Wolf*

362. **Curare and Electro-convulsive Therapy: A Simplified Technique**
R. R. Webb. *Medical Journal of Australia* [*Med. J. Aust.*] **2**, 851, Dec. 22, 1951.

Infectious Diseases

363. **The Primary Cutaneous Lesion of "Cat-scratch Fever" (Benign Lymphoreticulosis of Inoculation).** (Der kutane Primäraffekt der sogenannten Katzenkratzkrankheit, einer benignen Viruslymphadenitis)
C. HEDINGER, C. USTERI, T. WEGMANN, and F. WORTMANN. *Dermatologica* [*Dermatologica, Basel*] **114**, 101–107, 1952. 4 figs., 6 refs.

The authors, who work at clinics attached to the Universities of Zürich and Basle, describe the features of the cutaneous primary lesions in 2 cases of "cat-scratch fever". Most cases of this condition present with a lymphadenitis, and out of 32 cases seen by the authors the primary lesion has been examined in only these 2. The clinical and histological findings in both cases are described in detail. The diagnosis in each was confirmed by an intracutaneous skin test.

The first case was in a male veterinary surgeon aged 51 who, within a week of being scratched by a cat, developed a bean-sized, hard, reddish-blue nodule at one end of the scratch mark. There was no lymph-node enlargement, and the temperature and erythrocyte sedimentation rate remained normal. The whole lesion was excised for examination 14 days after the injury, and healing was without complication.

In the second case, in a female aged 47, there was no history of a scratch. The patient had a pea-sized, bluish-violet papule with central ulceration on the back of the left hand, and a firm, painful, enlarged epitrochlear gland. The Mantoux reaction was negative. She was treated with "alkacyl" and the condition cleared completely in 3 to 4 weeks.

Histologically, the lesions showed a circumscribed area of inflammatory reaction in the skin with a surprisingly wide band of infiltration in the subcutis. The infiltrate in the upper parts consisted chiefly of lymphocytes and leucocytes, while in the deeper layers there was some perivascular infiltration of plasma cells. In the early stages, as shown in the first case, eosinophils were prominent. These were less marked in the second case, which, in contrast, showed tuberculoid granulomata with foreign-body and Langhans-type giant cells.

The authors consider that the clinical and histological pictures of the disease are not specific, but that a diagnosis of benign lymphoreticulosis of inoculation may be suspected where these findings are obtained in the presence of a suggestive history. Confirmation of the diagnosis where skin lesions only are present rests almost entirely on the skin test. *Benjamin Schwartz*

364. **Poliomyelitis and Murray Valley Encephalitis: a Comparison of Two Neurotropic Virus Diseases**
F. M. BURNET. *Medical Journal of Australia* [*Med. J. Aust.*] **1**, 169–175, Feb. 9, 1952. 4 figs., 9 refs.

Only 2 important diseases in Australia are known to be due to neurotropic viruses—poliomyelitis and Murray Valley encephalitis. Some of the epidemiological and immunological factors involved in the spread of poliomyelitis are discussed, and the author concludes that the only logical approach to the prevention of poliomyelitis is by the development of some means of artificial immunization—possibly by the use of a living non-virulent virus administered by the alimentary route.

Murray Valley encephalitis occurred in epidemic form in 1951 and a virus was isolated from fatal cases. The geographical distribution of this outbreak differed from that of the outbreaks of "X" disease after the 1914–18 war. A serological survey by complement-fixation and neutralization tests showed that a large proportion of persons in the Murray Valley showed evidence of recent infection, whereas there was no incidence or very low incidence outside the area. Horses and dogs, but not cattle, in the area showed a high incidence of positive tests and so did native species of water birds. The conclusion was reached that an insect vector, probably a mosquito, was involved. It is still too early to decide whether control of the disease should be by anti-mosquito measures or by immunization. *J. F. Loutit*

365. **Suprahyoid Swelling on Inspiration in Poliomyelitis.** (Le gonflement sus-hyoïdien inspiratoire dans la poliomyélite)
P. SÉDALLIAN, F. JOURDAN, A. BERTOYE, C. EXBRAYA, G. MADONAT, and P. PAZAT. *Presse Médicale* [*Pr. méd.*] **60**, 1–3, Jan. 5, 1952. 3 refs.

The authors have observed that in certain cases of poliomyelitis in the acute stage with respiratory paralysis of the spinal type, but showing at the time none of the usual bulbar symptoms, a swelling appears above the hyoid bone during inspiration; this sign, in their opinion, carries a grave prognosis. The swelling is not due to passive distension, but to an active contraction of the suprahyoid muscles; but it is not another example of contraction of accessory muscles of respiration brought into play by anoxia, as it may occur alone. In almost every instance in which it appeared the patient failed to obtain relief in a respirator and the subsequent course was that of bulbar paralysis, often with a fatal issue.

No description of individual cases is given, but reference is made to a previous article by one of the authors, with others (*J. Méd. Lyon*, 1951, **32**, 325), in which this sign was described with clinical details and a discussion of its mechanism. The authors believe that the sign indicates bulbar involvement. They suggest that normally contraction of the suprahyoid muscles is inhibited reflexly during inspiration through the afferent fibres of the vagus nerve and its dorsal nucleus. With involvement of this nucleus the contraction appears. [The central pathways of this hypothetical reflex inhibition are not stated.] Involvement of the nucleus ambiguus may follow later, with the usual paralytic symptoms. The authors base their opinion largely on experimental work by Jourdan and Pazat on the dog,

which they review at length and in which it was shown that high bilateral section of both vagi reproduces this phenomenon in the dog. [Whatever the exact anatomo-pathological explanation of this suprahyoid contraction, clinicians who have the care of acute cases of poliomyelitis should read this article and also the paper mentioned, and ought soon to be able to confirm or deny the grave significance of the sign.] *L. J. M. Laurent*

366. ***Bacteroides* Infections**

L. V. McVay and D. H. Sprunt. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 56–76, Jan., 1952. 4 figs., 12 refs.

The authors comment on the neglect in modern medicine of infections due to *Bacteroides* which, in their opinion, account for many cases of serious septicaemia of unknown aetiology. They describe 35 cases observed at the John Gaston Hospital, Memphis, Tennessee, during the past 5 years, classifying them according to the portal of entry of the organism. The 6 respiratory cases, all in negroes (4 male, 2 female) included 3 studied at necropsy. *Bact. funduliformis* was recovered from the blood in 2 cases and from pleural fluid in a third. Patchy areas of consolidation were scattered throughout the lungs, with abscess formation in the cases examined post mortem. In 6 other cases (5 in negroes) the infection originated in the gastro-intestinal tract; there were 4 deaths. In the largest group (13 cases, 12 in negroes; 2 deaths) the infection originated in the female genital tract, while the urinary system accounted for a further 7 cases, all in females (4 negro). One male negro patient had a superficial abscess as a result of skin infection, which recovered after it was incised, and 2 male negro infants with otitis media were also found to be infected; both developed septicaemia and one died.

The usual picture is that of a pyogenic infection with the dominant symptoms determined by the portal of entry. *Bacteroides* should be suspected in cases of infection which fail to respond to the usual therapeutic measures. The most effective agent is aureomycin, which may have to be given intravenously. (It is noted that the preponderance of negroes in the present series may be accounted for by the fact that they constitute 70% of the patients attending the hospital concerned.)

D. Preiskel

367. **Diphtheria in the Immunized with Observations on a Diphtheria-like Disease Associated with Non-toxigenic Strains of *Corynebacterium diphtheriae***

D. G. ff. Edward and V. D. Allison. *Journal of Hygiene* [*J. Hyg., Camb.*] **49**, 205–219, June–Sept., 1951. 19 refs.

In a series of 81 patients admitted to Cardiff City Isolation Hospital between March, 1938, and October, 1944, with clinical diphtheria, 35 were found who had been fully inoculated and from whom toxigenic strains of the *Corynebacterium diphtheriae* were isolated. Of the infecting organisms in the inoculated patients, two-thirds were of the intermedius type—a higher proportion than that found in those who had not been inoculated. The blood antitoxin level on admission in 9 of the 35 was below, or in the neighbourhood of, the minimum believed to confer protection. The severity of the attacks bore no relationship to the level of antitoxin. In all cases there was a rise in the antitoxin titre in the convalescent stage.

During the investigation 18 patients with clinical diphtheria were found from whom only non-toxigenic strains of *C. diphtheriae* were isolated. In the majority of these the serum antitoxin titre was high on admission and did not rise in the convalescent stage. Of the strains isolated, 7 were of the gravis, 2 of the intermedius, and 10 of the mitis type. One attack was severe, 8 moderately severe, and 10 were mild. (One patient had 2 attacks.) No patient in this group developed paresis or myocarditis. The authors suggest that under certain conditions non-toxigenic strains of *C. diphtheriae* may cause a diphtheria-like disease.

R. S. Illingworth

368. **Cardiac Complications of Pertussis**

S. H. Walker. *Journal of Pediatrics* [*J. Pediat.*] **40**, 200–213, Feb., 1952. 2 figs., 23 refs.

After noting the rarity of reports of cardiac complications in the extensive literature of pertussis, the author gives clinical and pathological details of 3 cases in which varying degrees of cardiac failure appeared to be due solely to the mechanical effects of the whooping-cough.

The first patient, aged 4 months, was admitted to the Cleveland City Hospital on March 17, 1950, and died on April 8 with general oedema, dyspnoea, and extreme tachypnoea. At necropsy there was extensive bronchiolitis, with the possible coexistence of interstitial pulmonary emphysema (which the author regards as the real cause of heart failure in pertussis), though this could not be proved beyond doubt. No valvular or other cardiac defect was present. The second patient, a child of 3½ years, recovered after suffering from gross enlargement of the liver and general oedema for some weeks. No residual cardiac abnormality was observed. The third patient, an infant of 18 months, also recovered after some weeks of illness with what seemed to be congestive heart failure accompanied by engorgement of the liver and tachypnoea. Again no permanent ill effects were detected.

In discussing these cases the author considers that myocardial insufficiency was certainly due to some factor present as a direct result of pertussis and not to antecedent cardiac disease, and he considers that the important event was right ventricular stress attributable to increased tension in the pulmonary circulation. Response to digitalis in the 2 oldest children was particularly noted.

[Since myocardial failure is so rarely encountered in pertussis some doubt must remain concerning the aetiology of these 3 cases. It seems that bronchopneumonia alone could have accounted for the death of the infant, and that the myocarditis was toxic. Babies do, not uncommonly, die in this manner when infected with pertussis. The abstracter has never seen congestive failure even in the most severe cases of pertussis during 28 years' experience.] *Joseph Ellison*

369. **The Isolation of *Toxoplasma* from the Human Placenta and Uterus.** [In English]
J. MELLGREN, L. ALM, and Å. KJESSLER. *Acta Pathologica et Microbiologica Scandinavica* [*Acta path. microbiol. scand.*] **30**, 59–67, 1952. 8 figs., 20 refs.

The authors describe a case of human toxoplasmosis occurring in Sweden which throws new light on the transmission of the infection to the foetus. The patient, a woman aged 30, had been pregnant 4 times (1st, abortion; 2nd, premature child, still living; 3rd, deformed child; and 4th, dead foetus). In the last case labour was induced by "utedrine" and quinine, resulting in the birth of a macerated foetus and expulsion of the placenta. Post-mortem examination of the foetus revealed no gross or histopathological changes, and no toxoplasms could be detected in the tissues. On the maternal side of the placenta infarcts were present, with irregular necrotic patches and numerous calcium deposits. Giemsa-stained preparations revealed bodies resembling *Toxoplasma*, on account of which toxoplasmic infection was suspected. The patient herself had no clinical signs of the infection, but immediately after parturition her serum showed a high *Toxoplasma*-neutralizing titre, which gradually diminished in the course of a year. Her condition suggested chronic toxoplasmosis, which had been activated during pregnancy.

In view of suspected toxoplasmosis, attempts were made to detect the presence of the parasites by douching the vaginal cavity and inoculating the washings into susceptible animals (guinea-pigs and mice). The results were positive in a number of the rodents, from which three substrains of *Toxoplasma* were then successfully isolated.

This is the first record of toxoplasmic infection of the placenta. Since the parasites can be widely dispersed in various organs, the infection might also involve the uterus. It is conceivable that when an infected uterus expands during pregnancy the pseudocysts may rupture and release the parasites, thus enabling them to invade the placenta, and thence the foetus. *C. A. Hoare*

370. **Acute Infections of the Fingers and Hand**
D. BAILEY. *Lancet* [*Lancet*] **1**, 167–171, Jan. 26, 1952. 1 fig., 8 refs.

The author stresses that obsolete methods of treatment of acute infections of the fingers and hand are still all too common. [The abstracter entirely agrees, and the loss of working hours and permanent disability which occur must be enormous—and mostly unnecessary.] The paper contains a report on the hand clinic at University College Hospital, London, during a period in which 1,745 new patients with acute infections of the hand were treated. The nomenclature of the various infections is discussed, and details are given concerning methods of treatment.

Most patients are immobilized with a plaster-of-Paris slab in the position of function, which ensures adequate rest. Penicillin is administered, except in mild cases of paronychia or when a small abscess has already localized. The presence of pus is diagnosed either by visible swelling or by localized tenderness, which is detected by palpation with a pair of fine forceps. [The importance of a disturbed night's rest due to throbbing pain is not mentioned.] If incisions are necessary, analgesia is obtained by procaine block, the operation field being rendered bloodless by the application of a sphygmomanometer cuff after elevation of the arm.

The length of disability is given for various types of infection and, with the exception of erysipeloid, shows a gratifying diminution as compared with previous series of cases. [The abstracter has already commented on the prolonged disability caused by erysipeloid, which is rather surprising in that most cases readily respond to penicillin.]

[This is an interesting article which outlines the modern treatment of infections of the fingers and hand. The danger of ill-placed incisions is mentioned, but it would have been more instructive if details had been given of the sites at which such incisions are apt to prolong disability or even permanently impair function.]
R. J. McNeill Love

371. **Local Use of Chloramphenicol in Wound Infections**
M. H. FLINT, H. GILLIES, and D. A. C. REID. *Lancet* [*Lancet*] **1**, 541–544, March 15, 1952. 4 figs., 20 refs.

It is a depressing fact that organisms are becoming increasingly resistant to the sulphonamides and the older antibiotics; even streptomycin often rapidly produces resistant strains of organisms. In fact, the authors state that it is now the exception for them to find a strain of *Staphylococcus aureus* which is susceptible to either penicillin or streptomycin, and they recommend chloramphenicol as the most useful antibiotic for ulcers and wound infections. They base this recommendation on 30 consecutive cases, including such conditions as infected burns, varicose ulcers, and abscess cavities, which were treated by the local application of 5% chloramphenicol. Bacterial clearance was obtained in all cases within an average time of 4 or 5 days. The preparation was used either as a powder in lactose or as a solution in propylene glycol. Clinical details are presented of 2 cases.

[This is a valuable paper, and the methods described are a distinct advance in the local treatment of infected wounds which prove resistant to the usual lines of treatment.] *R. J. McNeill Love*

372. **Atypical Bone Changes in Boeck's Sarcoidosis.** (Über atypische Knochenveränderungen bei Morbus Besnier–Boeck–Schaumann)
K. HEKELE and R. SEYSS. *Hautarzt* [*Hautarzt*] **3**, 67–70, Feb., 1952. 3 figs., 41 refs.

During a complete radiological investigation of the entire skeleton in 3 cases of sarcoidosis, the cyst-like spaces typical of this disease were seen in the ilium, acetabulum, and lumbar vertebrae in 2 of the patients. The third had the lesions in the metacarpals—the usual site—but severe destruction was also seen in the adjacent interphalangeal joints. It is thought that more complete investigation of the skeleton in this condition may show lesions in many bones now considered rarely to be the seat of sarcoid changes. *G. W. Csonka*

Tropical Medicine

373. **Intravenous Amodiaquin (Camoquin) in Naturally Acquired and Induced Malaria**
E. PAYNE, V. M. VILLAREJOS, E. A. SHARP, J. W. REINERTSON, and W. S. WILLE. *American Journal of Tropical Medicine* [*Amer. J. trop. Med.*] **31**, 698–702, Nov., 1951. 9 refs.

In an examination of the toxicity and therapeutic efficacy of amodiaquin ("camoquin") given intravenously in cases of malaria, a preliminary study was first made on patients with incurable disease: injections were given slowly and no immediate or delayed toxic effect was observed. The antimalarial effect of intravenous amodiaquin was then tested on both naturally acquired and induced infections with *Plasmodium vivax*. In the former case a solution containing 150 mg. of base in 5 ml. was injected slowly. A few hours after the injection there was a reduction in the number of circulating parasites, which disappeared completely within 12 to 18 hours, the temperature returning to normal at the same time. There was a rapid improvement in the subjective state of the patient, headache disappearing and appetite and activity increasing. No significant differences were found in the blood cellular content or chemistry before and after treatment, and hepatic and kidney function remained normal. In 2 of the 5 cases treated the infection relapsed. A series of 23 patients with induced malaria were treated with 2 doses of 150 mg. of amodiaquin given intravenously at an interval of 3 hours. Improvement was rapid. There was one recrudescence, which was controlled by repeating the dosage regime. *W. H. Horner Andrews*

374. **Experiences with Amodiaquin (Camoquin), a New Synthetic Antimalarial**
V. M. VILLAREJOS. *American Journal of Tropical Medicine* [*Amer. J. trop. Med.*] **31**, 703–706, Nov., 1951. 10 refs.

The trial of amodiaquin ("camoquin") here reported was conducted at La Plaz, where no vectors of malaria exist, although at a lower altitude nearby there is endemic disease. The number of cases treated was 358, of which 108 were due to *Plasmodium falciparum*, 232 to *P. vivax*, and 18 to both parasites; 84% of the cases were chronic, with erythrocyte counts varying between 2,300,000 and 4,800,000 per c.mm. The final procedure adopted was to give a single oral dose of approximately 10 mg. per kg. body weight (0·8 g. for an average patient). Disappearance of headache was rapid, and 24 hours after giving the dose the blood of 80% of patients was negative for parasites, while 4 hours later that of the remaining 20% had become negative. With this dosage the gametocytes of *P. falciparum* persisted for 48 hours or longer unchanged, but larger doses appeared to be gametocidal. Only 2 patients failed to respond rapidly: both were suffering from intestinal disorders, and absorption may not have been adequate. The relapse rate for vivax malaria was 10%, whereas with the usual treatment in this area the relapse rate is 21%. The drug appears to be non-toxic, and was given without mishap in the presence of hepatic, renal, cardiac, and pulmonary disease. *W. H. Horner Andrews*

375. **Proguanil-resistance in Malayan Strains of *Plasmodium vivax***
T. WILSON, D. S. MUNRO, and D. R. RICHARD. *British Medical Journal* [*Brit. med. J.*] **1**, 564–568, March 15, 1952. 4 figs., 14 refs.

Proguanil replaced mepacrine as a suppressive for malaria in the British Army in Malaya early in 1949. Late in 1950 an outbreak of malaria occurred in an Army unit combating bandits in the Tampin district of Negri Sembilan, the strength of the unit being about 600 men. The official dose of proguanil was 100 mg. daily. From July 1, 1950, to April 9, 1951, there were 67 primary attacks (about half of subtertian and half of benign tertian), of which 32 occurred in November and December as a consequence of night patrolling. It was debated whether these attacks were due to proguanil-resistant strains of malaria or to irregular administration of proguanil as a suppressive. Accordingly, 3 of the patients with acute *Plasmodium vivax* infection were admitted to hospital and treated with 300 mg. proguanil daily for 7 days, after which they returned to their unit and took 100 mg. daily as before. All gave a good clinical response, but all relapsed in 11 to 17 days in spite of still receiving the drug. Three other cases were then treated in the same way, the men this time being kept under close medical supervision throughout. All 3 again responded well to the course of 300 mg. daily for 7 days, but they all relapsed in 7 to 13 days in spite of taking 100 mg. daily under supervision. The relapses responded somewhat slowly to proguanil in doses of 300 to 400 mg. daily. A seventh case responded to the first course of 300 mg. daily, but relapsed in 9 days while receiving 100 mg. daily, and did not respond properly to a second course of 400 mg. daily. Obviously in this case the strain of *P. vivax* was resistant to proguanil, and it probably was in the other patients also. (Later another case of proguanil-resistant benign tertian malaria occurred in this area, there being no response to 300 mg. daily for 7 days.)

Apparently *P. vivax* infections in the Tampin area are much more resistant to proguanil than they are in other parts of Malaya. Perhaps one or more strains of *P. vivax* have become resistant through exposure to inadequate doses of proguanil, the resistant strain then being transmitted through mosquitoes to new patients. At present proguanil is widely used in Malaya as a suppressive, but in view of these results it may be necessary to change to a different drug. *F. Hawking*

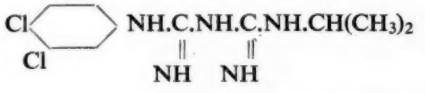
376. **Chemotherapy and Chemoprophylaxis of Malaria. Clinical Trials in 500 Cases and Mass Prophylaxis in a Hyperendemic Area**

R. N. CHAUDHURI, N. K. CHAKRAVARTY, and M. N. RAI CHAUDHURI. *British Medical Journal* [*Brit. med. J.*] **1**, 568–574, March 15, 1952. 1 fig., 6 refs.

Therapeutic trials were made on patients at the Calcutta School of Tropical Medicine and suppressive trials in a rural area nearby. Of the 500 cases treated, 51% had *Plasmodium vivax* and 42% *P. falciparum*, and the remainder were cases of mixed or *P. malariae* infection. A detailed table is given of the results of the different treatments. With proguanil the best therapeutic effects were obtained with a daily dose of 0·3 to 0·6 g.—0·6 g. twice on the first day and 0·3 g. daily for the next 4 days. To prevent relapses of *P. vivax* or *P. malariae* infections it should be combined with pamaquin or followed by 0·3 g. proguanil weekly as long as possible. The total amount excreted in the urine was 37 to 54% of the dose, most of this being excreted in the first 48 hours. No toxic reactions were observed unless the dose was high. When 0·8 g. was given as a single dose daily or in divided doses there was gastro-intestinal irritation with symptoms of nausea, vomiting, diarrhoea, and griping. Renal irritation was noted in 2 patients, one of whom had haematuria; these symptoms subsided quickly when the drug was stopped.

The relapse rate was about 40% during the next 3 to 6 months. Several cases of *P. falciparum* malaria did not respond to proguanil and 2 patients died; strains of this organism seemed to be resistant. In 12 cases an intravenous injection of up to 400 mg. proguanil acetate or lactate was given. Usually it was well tolerated, but 2 patients had phlebitis of the vein used for injection, one had severe collapse after the injection, and one patient developed symptoms like encephalitis, which cleared up in 2 months. Another 12 cases were treated by intramuscular injection of 0·1 to 0·3 g. of proguanil lactate. The response was fairly good, but the injections caused local pain and induration lasting up to 3 days.

Trial was also made of a new compound (" M5943 "), which is like proguanil, but has an extra chlorine atom on the benzene ring. The formula is:



It was given to 17 cases of *P. vivax* infection and one of *P. malariae* infection in doses of 20 mg. thrice daily for 10 days. The effect was similar to that of proguanil, 0·3 g. daily. Three cases relapsed in 3 months; 7 patients had toxic reactions—nausea, vomiting, or abdominal pain; one had bleeding from the gums, and another dysuria. Other patients were treated with quinine and pamaquin or with proguanil and pamaquin.

Chloroquine was given to 75 patients. The clinical response to this drug was much prompter than it was to proguanil. Patients were given a single dose of 0·5 to 1·5 g. of the base. Among 50 cases treated with 1·25 to 1·5 g. there were toxic symptoms in 5—namely, insomnia, gastro-intestinal irritation, pruritus of hands and feet, and pain in the lower abdomen, genitalia, and thighs. One patient had epileptiform fits. Four patients out of 20 relapsed in 1 to 7 months. " Camoquin " proved to be almost as potent as chloroquine. A single dose of 0·5 g. base terminated fever and cleared away the parasites in 2 days in 84% of 52 cases, and was better than 0·1 g. twice daily for 3 days. The drug was well tolerated. Of 33 patients, 8 relapsed after the single dose of 0·5 g. No toxic reactions were observed. These two drugs can also be combined with proguanil. It is considered that chloroquine and camoquin are the best drugs to use for the treatment of malaria.

In the chemoprophylaxis trials, 5 groups, each of 250 subjects, were treated with: proguanil, 0·1 g. twice weekly; proguanil, 0·3 g. once weekly; camoquin, 0·2 g. once weekly; chloroquine, 0·25 g. once weekly; or quinine sulphate, 5 gr. (0·32 g.) twice weekly. Chloroquine and camoquin proved superior to proguanil, affording high protection and reducing splenomegaly.

[This paper summarizes a great deal of work and should be consulted in the original by those interested in the control of malaria.] *F. Hawking*

377. **The Treatment of Amebiasis with Fumagillin**

J. H. KILLOUGH, G. B. MAGILL, and R. C. SMITH. *Science* [*Science*] **115**, 71–72, Jan. 18, 1952. 4 refs.

The investigation described was carried out by a U.S. Naval Medical Research Unit at Cairo on 22 male patients infected with *Entamoeba histolytica*. The antibiotic fumagillin, which has only a slight antibacterial activity but a marked amoebicidal action, was administered orally, the daily amount varying from 5 to 50 mg. given in divided doses for 2 weeks. The disappearance of *E. histolytica* was prompt in patients with mild symptoms, stools becoming negative within 48 hours; but it is stated that some cases have been observed for only 3 weeks, and further trials must be awaited, with a follow-up period of several months, before the effectiveness of this new antibiotic is established. The patients were infected with other parasites as well and it was noted that, besides being effective against *E. histolytica*, fumagillin exerted some effect also against *Bacterium coli*, *Giardia lamblia*, *Chilomastix mesnili*, *Endolimax nana*, *Iodamoeba buetschlii*, *Trichomonas hominis*, and *Plasmodium vivax*. Other parasites present in the patients, but which were unaffected, were *Schistosoma haematobium*, *Ascaris lumbricoides*, *Ankylostoma duodenale*, *Enterobius vermicularis*, and *Hymenolepis nana*. [The patients were obviously very cooperative as test screening subjects.] Signs of toxicity were slight: 2 patients receiving 50 mg. daily complained of dizziness, and 4 others of loss of appetite without nausea. *R. Wien*

378. **The Recognition and Treatment of Hepatic Amebiasis**

D. C. ZAVALA and H. E. HAMILTON. *Annals of Internal Medicine* [*Ann. intern. Med.*] **36**, 110–125, Jan., 1952. 6 figs., 14 refs.

History of Medicine

379. **Ambroise Paré, Dermatologist.** (Ambroise Paré, dermatologiste)
A. TOURAINE. *Presse Médicale* [*Pr. méd.*] **59**, 1792–1796, Dec. 25, 1951. 15 figs.

"All that the 16th century knew of medicine can be found in Ambroise Paré." Scattered among his works is material enough for a treatise on dermatology, and in this paper the passages concerning skin are abstracted and prefaced by a detailed description of Paré's views of the physiology of the skin, which were not far removed from those of the average man of to-day. Descriptions of specific skin diseases appear amongst those of tumours and ulcers, and these provide most of the directly relevant material. It shows Paré familiar with most of the common skin tumours, though ignorant of their origin. Ulcers are classified on the basis of appearance, and are not related to their cause. Certain specific diseases such as alopecia, scurf, and blepharitis, and the ravages of syphilis are well described.

(The article is extended by the inclusion of some of the more imaginative works of Ambroise Paré on the monstrosities.) *J. G. Bonnin*

380. **Obstetrics in the Middle Ages and in the 16th Century.** (L'obstétrique au moyen age et au XVI^{e} siècle)
R. VAULTIER. *Presse Médicale* [*Pr. méd.*] **59**, 1797–1800, Dec. 25, 1951. 10 figs.

In the art of the Middle Ages scenes of the most elevated character were mixed with others which appear profane, vulgar, or trivial. The young mother in pictures of the nativity, deprived of her aureole, becomes a simple parturient peasant and the scene around her the scene common to childbirth in any humble home of the period. From the end of the 14th century one or two midwives appear in the scene to assist the Virgin, while St. Joseph is also depicted kindling a fire, preparing the swaddling clothes, or warming a drink. Such illustrations give an otherwise dull religious work an interest which its written contents would never elicit.

Before the 14th century little scientific attention was paid to obstetrics in France, but thereafter medical authorities became better informed. For example, Gordon of Montpellier recognized three types of labour: (1) natural labour with a head presentation and no difficulties; (2) a difficult labour with a normal presentation; and (3) abnormal presentation. However, not until 1586 was the first treatise on obstetrics, by Rhodion or Rodion, published in France. While this volume is still full of superstitious remedies, it also contains practical descriptions of various types of labour. No one appears to have advocated Caesarean section at that time, though the operation was known and its performance recorded at Bethune in 1509 and in Brittany in 1575, and there are many other references to it. Ambroise Paré describes it as known and possible, but states that he had never advised it. In 1581 Rousset of Montpellier published his *Treatise on Hysterectomy or Caesarian Birth*, recommending the operation, which has now become an obstetrical classic.

Among other books of the period related to the art is one by Joubert, which records the popular superstitions related to gynaecology, the causes of sterility, the methods of telling the sex of the foetus and avoiding birthmarks and the like, and many country doctors would testify to the fact that a great number of these superstitions are still alive at the present day. Thus the number of knuckles in the umbilical cord indicated the number of children to come; to avoid birthmarks in obvious places the hands should be placed on the back if the pregnant woman is unable to satisfy a sudden appetite. To complete the catalogue of superstitions relevant to pregnancy the works of the astrologers of the period must be consulted. *J. G. Bonnin*

381. **The Practice of Medicine by the Clergy in the 17th Century and Madame Fouquet's Remedy Book.** (L'exercice de la médecine par le clergé au XVII^{e} siècle et le livre des remèdes de Madame Fouquet)
C. VIALATTE. *Presse Médicale* [*Pr. méd.*] **60**, 486–487, April 2, 1952. 5 refs.

382. **The Last Days of the Barber-Surgeons.** (Aus den letzten Tagen der Barbier-Chirurgen)
S. DAHL. *Acta Medica Scandinavica* [*Acta med. scand.*] Suppl. 266, 39–48, 1952. 4 refs.

383. **Henry Bence Jones, 1814–1873**
R. G. HODGKINSON and R. HODGKINSON. *Medicine Illustrated* [*Med. ill.*] **6**, 134–138, March, 1952. 1 fig.

384. **Brown-Séquard. A Biographical Essay**
M. JEFFERSON. *Lancet* [*Lancet*] **1**, 760–761, April 12, 1952.

385. **The Reception of Harvey's Doctrine in Denmark.** [In English]
E. GOTFREDSEN. *Acta Medica Scandinavica* [*Acta med. scand.*] Suppl. 266, 75–85, 1952. 19 refs.

386. **Napoleon's Sanitary Legislation for the Isle of Elba.** (Napoleone legislatore sanitario all'Isola)
G. ALBERTI. *Gazzetta Sanitaria* [*Gazz. sanit.*] **23**, 68–75, Feb., 1952. 3 figs.

387. **A Review of Slave Care on Southern Plantations**
W. D. POSTELL. *Virginia Medical Monthly* [*Va med. Mon.*] **79**, 101–105, Feb., 1952. 3 refs.